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THE SURGICAL TREATMENT OF EXOPHTHALMOS*

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Exophthalmos of slight degree may occur in high degrees of myopia, but when more marked it is commonly caused by the growth of soft tissue or bony tumors in the back of the orbit, and rarely it may be produced by arteriovenous aneurysm. The only constitutional disease causing the condition is exophthalmic goiter. The peculiar staring with widening of the palpebral fissure caused by myocardial disease is often confused with exophthalmos. In this way toxic goiter may be confused with true hyperthyroidism, as pointed out by Plummer.¹

Exophthalmic goiter was described by various observers in the latter half of the eighteenth century, notably by Morgagni² and Parry,³ followed in the first half of the nineteenth century by further writings of Parry, Flajani,⁴ Graves,⁵ Basedow⁶ and numerous others. Each described the symptoms of hyperthyroidism with sufficient accuracy to leave no doubt that their observations were made on the same type of cases.

It was Graves, however, in his lectures in 1835, who laid the most stress on exophthalmos. Many observers do not consider the condition to be true Graves' disease unless the protrusion of the eye is marked enough to be easily recognized. This was correct, since early observers based their diagnoses on symptoms unsupported by pathologic evidence. If the other symptoms were present, it was considered pseudo-Graves' disease until exophthalmos occurred. Usually, however, the staring (of Stellwag), and the widening of the palpebral fissure (of Dalrymple) were accepted in lieu of exophthalmos.

The eye symptoms in hyperthyroidism are so striking in character and often so distressing to the mind of the patient that they have been made the subject of frequent observation. In extreme cases, erosions and ulcers of the cornea occur. I have observed two

patients totally blind from this cause, and several patients blind in one eye. The lagging behind of the lids, which follow the movement of the eyeball with a jerking motion, was noted by Graefe.⁷ Stellwag⁸ noted the staring without winking for much longer intervals than common. Dalrymple⁹ noted the unnatural widening of the palpebral fissure, and Möbius¹⁰ observed that when exophthalmos was extremely marked, diplopia occurred on near vision. The exophthalmos was ordinarily considered a congestion of the venous plexus of vessels at the back of the orbit and therefore connected with the circulatory disturbance of the disease.

The late Dr. Landström,¹¹ of Stockholm, has given a most acceptable version of the development of exophthalmos in hyperthyroidism. He has shown that a previously undescribed microscopic muscle in streaked layers occurs in the fascia behind the eyeball and about the globe.

This irregular muscular sheath is attached forward to the lids and anterior orbital fascia. The muscle-bundles are irregularly placed and are scarcely to be distinguished macroscopically, but may readily be found microscopically. They are under the control of the sympathetic nervous system and their function is to resist the action of the four active orbital muscles which otherwise draw the eyeball back. When irritated, they draw the eyeball forward and the lids backward. This muscular system is additional to the well-known muscle of Müller.¹²

It was noted in 1873 that the irritation of the sympathetic ganglion caused dilatation of the iris with some protrusion of the globe. The experiments of Claude Bénard¹³ confirmed these observations and showed that by the irritation of the cervical sympathetic the eyeball is pressed forward and to a certain degree the closure of the eyelids is prevented. It is therefore doubtless the sympathetic which innervates these muscles, and an irritation of its fibers doubtless affects this muscle first, the symptoms observed by Stellwag, Graefe and Dalrymple being produced as a direct result of such irritation.

Wiener¹⁴ showed that irritation of the sympathetic ganglion caused increased intra-ocular tension, while its destruction caused lower tension for a time. This led to the operations on the sympathetic for the cure of glaucoma by lowering the tension and causing contraction of the iris.

7. Graefe: Arch. f. Ophth., 1857, iii, 278.

8. Stellwag: Wien. med. Jahrb., 1869, p. 25.

9. Dalrymple: Jour. Morbid Anat., 1828, p. 43.

10. Möbius: Schmidt's Jahrb., 1886, No. 210, p. 237.

11. Landström: Ueber Morbus Basedowii, 1907.

12. Müller: Ztschr. f. Zool., 1858; Würzb. Verhandl., 1859.

13. Bénard: Contribution à l'étude du goitre exophthalmique, pathogénie, traitement, Paris, Thèse, 1882.

14. Wiener: Ueber einen Fall von Morbus Basedowii mit Tabes incipiens, Berlin, 1891, p. 31; Ueber die Basedowsche Krankheit, 1868.

* Read before the Section on Surgery at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Plummer, H. S.: The Clinical and Pathologic Relationships of Hyperplastic and Non-Hyperplastic Goiter, *THE JOURNAL A. M. A.*, Aug. 30, 1913, p. 650.

2. Morgagni: De sedibus et causis morborum, Cap. xxi, Art. 36; Cap. xvii, Art. 19; Cap. xxiii, Art. 4 and 6.

3. Parry: Collections from the Unpublished Medical Writings of the Late Caleb Hillier Parry, London, 1825, Elements of Pathology and Therapeutics, 1815.

4. Flajani: Collezione d'osservazioni, e riflessioni di chirurgia, p. 270.

5. Graves: London Med. and Surg. Jour., May 23, 1835 (Repr. System of Clinical Medicine, Dublin, 1843).

6. Basedow: Wehnschr. f. d. ges. Heilk., 1840, p. 13.

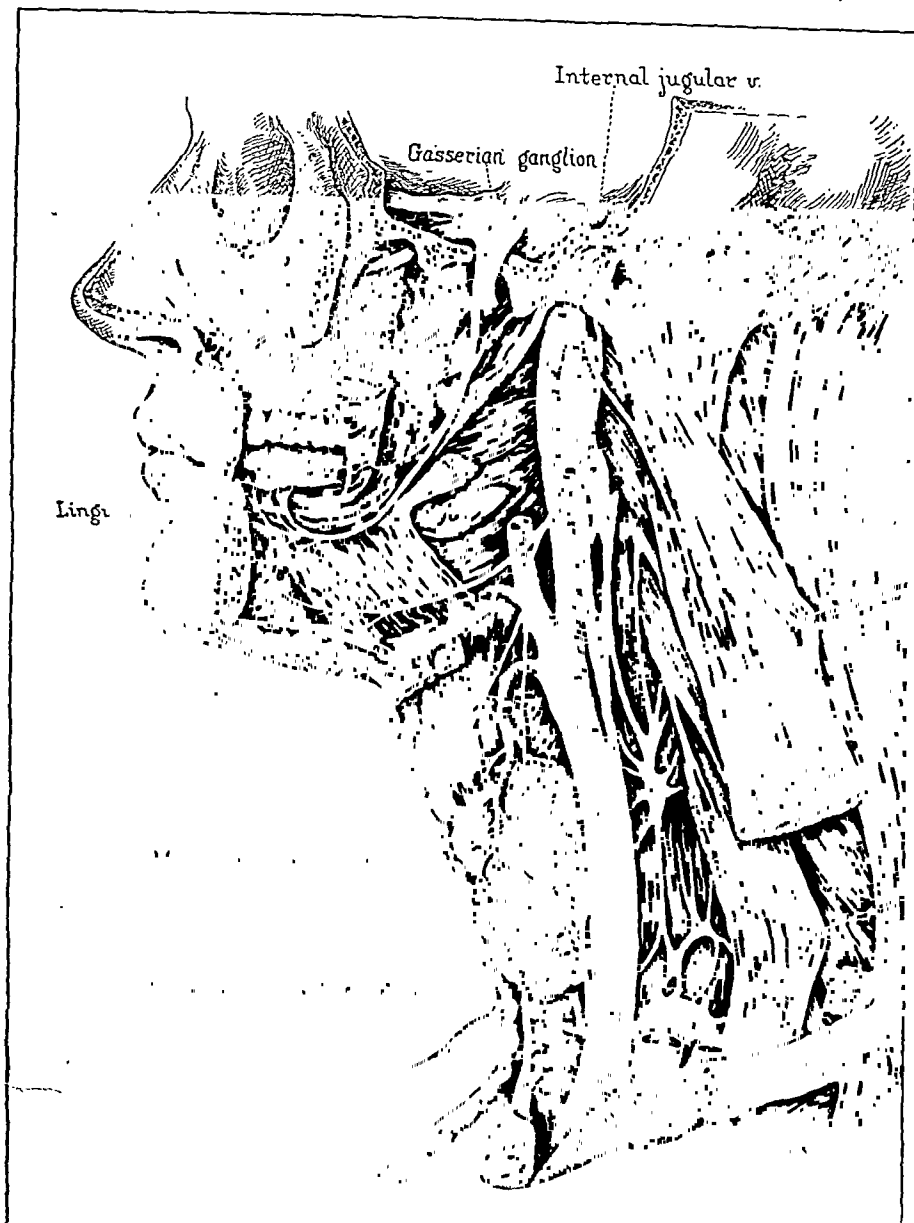


Fig. 1.—Showing position of superior, middle and inferior cervical ganglia.

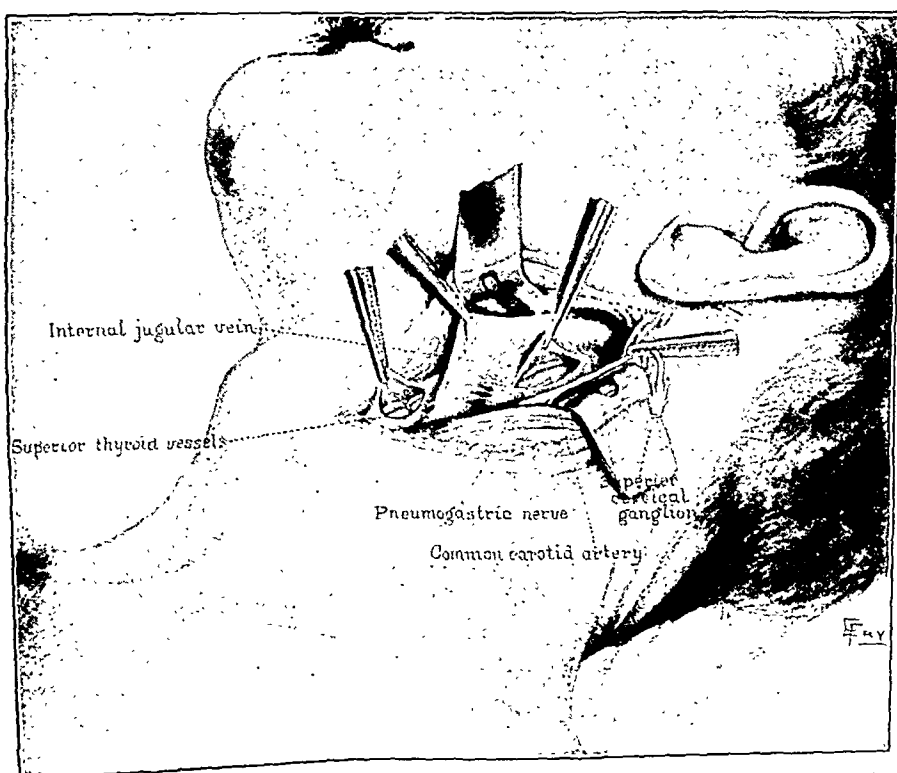


Fig. 2.—Shows incision into the sheath of the carotid vessels and exposure of pneumogastric nerve. Dissection of superior cervical ganglion and superior thyroid vessels ligated.

Trousseau¹⁵ believed the cervical sympathetic to be involved in exophthalmic goiter, and an operation which would relieve this extremely marked feature of the disease was looked on by him as being at least theoretically advisable.

Jaboulay,¹⁶ in 1896, was the first to introduce an operation on the sympathetic ganglion for exophthalmic goiter. His most enthusiastic disciples were Abadie and Jonnesco. While quite a number of operations on the cervical sympathetic for hyperthyroidism have been performed at a few clinics, especially Jonnesco's, and a few scattered operations have been performed at many clinics, the relief in general is apparently about the same as that which follows ligation of the vessels and injection of boiling water into the gland. The reduction of the exophthalmos is often very marked.

In 1906, before a meeting of French surgeons, Abadie¹⁷ stated that this operation produced perfect cures while partial extirpation of the thyroid removed only part of the symptoms, and did not remove the exophthalmos. He maintained that sympathectomy would surely cause the disappearance of the exophthalmos.

Balacescu¹⁸ believes that the removal of the whole of the cervical sympathetic is indicated and that no bad results follow the operation.

It is very certain that while the surgical ablation of the greater part of the thyroid cures in the majority of cases of hyperthyroidism, and even relieves eye-symptoms in most cases, yet in numerous instances this one feature remains to distress the patients when otherwise they feel very well.

Some of these patients are greatly improved by a secondary operation which consists of scalping the edge of both lids from a quarter to a third of an inch at the outer canthus and uniting the margins of the lid. The Jaboulay operation, that is, a cervical sympathectomy of the superior and sometimes of the middle ganglia (Fig. 1) for the purpose of reducing exophthalmos and securing a slight ptosis of the upper lids has been used in our clinic. In cases of hyperthyroidism in which the exophthalmos is extreme and the nervous symptoms out of proportion to the size of the thyroid, the sympathetic ganglia are removed and in the same incision the superior thyroid vessels are ligated. This operation can be done with novocain as a local anesthetic, but is preferably made with a general or combined anesthetic. Incisions are made in the lines of the natural creases in the neck opposite the bifurca-

15. Trousseau: A Report on Paper by Hiffelsheim before Paris Academy of Medicine in 1860; *Clinique*, v, 571.

16. Jaboulay: *Bull. de l'Acad. de méd.*, 1897, xxx iii.

17. Abadie: *Traitement chirurgical du goitre exophthalmique*, Cong. franç. de chir., 1906.

18. Balacescu: *Arch. f. klin. Chir.*, 1902, p. 59.

tion of the carotid (Fig. 2). The sternomastoid is drawn outward and a blunt dissection is made down to the jugular and carotid veins, which are then drawn inward. The posterior sheath of fascia inclosing these vessels is opened that the vagus nerve may be kept under observation since this nerve is bulbous above this point and might be confused with the sympathetic.

Under normal conditions the sympathetic ganglion is one-eighth to one-fourth of an inch wide. Many branches lead from it on either side. The connecting branches are divided, the upper part of the ganglion torn off or cut and the lower portions of the nerve cut or torn off at the middle ganglion unless the middle ganglion is also removed. The wound is closed without drainage.

When the sympathetic ganglion is thus removed with the middle cervical ganglion, the result is very good in securing relaxation of the eyeball and slight ptosis of the upper lid with great general improvement of symptoms. In some cases in which the sympathetic does not seem to occur as a ganglion, but in which fewer and larger communicating branches are found, the result has not been so good, some patients receiving but slight benefit from the operation, the operation seemingly being incomplete. The ease with which it is performed and the excellent results which frequently follow its employment, however, warrant its consideration for the relief of certain patients suffering from extreme degrees of exophthalmos.

In our cases in which the vessels of both upper poles were ligated in addition to the sympathectomy the primary results were good, but the time since operation is yet too short to warrant a positive statement as to the permanency of cure. Time will show just how extensive resections of the sympathetic may be made without causing complications.

ABSTRACT OF DISCUSSION

DR. DEAN LEWIS, Chicago: Notwithstanding the amount of work that has been done on exophthalmic goiter during the past ten years, we are still in doubt concerning the causes of the thyroid hyperplasia which gives rise to the symptoms, and which after it develops dominates the clinical picture. One of the most bothering symptoms and one which remains most frequently after operation is exophthalmos which in some instances is so marked as to be actually disfiguring and may lead to such exposure of the cornea that ulceration follows. The earlier operations on the cervical sympathetic were followed by marked improvement in this symptom, and the mechanism of the exophthalmos, as demonstrated by Landstrom, furnishes a basis for the operation suggested by Dr. Mayo. We are beginning to realize that all the ductless glands are intimately related and that in cases of ductless gland disarrangement we are dealing with a pluriglandular syndrome. We can expect ideal results when we can bring about a readjustment of these glands. At present we are not doing this, as would seem to be indicated by the frequency with which some symptoms persist even after most successful thyroidectomy. This operation controls the exophthalmos with a greater degree of certainty than any yet suggested, but should be reserved for the bad cases which are actually disfiguring or may result in ulceration of the cornea.

Cleanliness and Progress.—Truly our changed point of view denotes progress. Once cleanliness was a virtue; now the lack of it is a crime.—*Bull. Dept. Health, New York.*

APERIOSTEAL AMPUTATION*

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In amputations there are four methods of treating the bone: periosteal, osteoplastic, tendinoplastic and aperiosteal. Modern surgical technic demands that both diaphyseal and epiphyseal amputations must yield stumps capable of directly supporting the whole weight of the body.

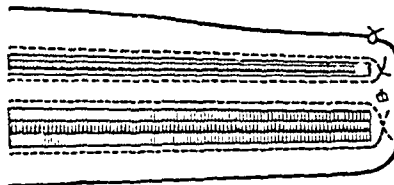


Fig. 1.—Periosteal method of treating the bone.

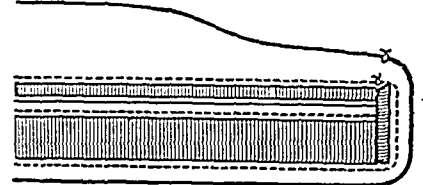


Fig. 2.—Osteoplastic method of treating the bone.

In the periosteal method (Fig. 1) the periosteum is divided at a sufficient distance below the saw-line to provide a covering for the raw bone. The functional results of this method cannot be compared with those obtained by the osteoplastic or the aperiosteal methods. In diaphyseal amputations an end-bearing stump is rarely obtained, and in amputations through the shaft of the femur the results are notoriously bad. Cramer¹ in a series of 96 cases of amputations through the thigh and leg found 70 bad stumps, and only 2 capable

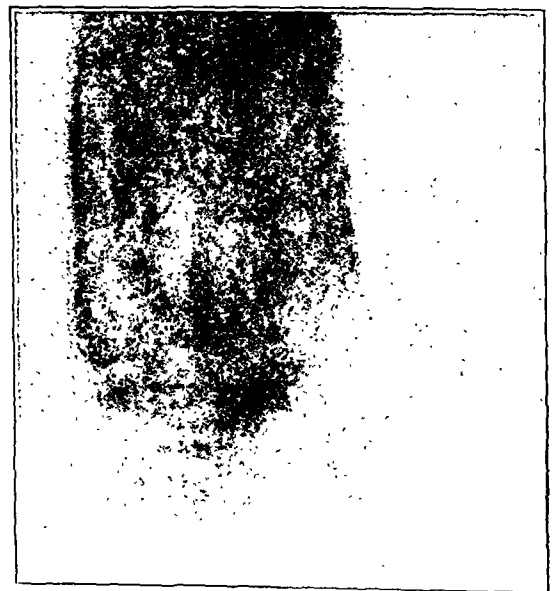


Fig. 3.—Result after a Gritti-Stokes osteoplastic amputation of the thigh. A good end-bearing stump with no bone atrophy.

of bearing direct weight. In a personal study of 13 amputations through the thigh I found only 1 end-bearing stump. These amputations were performed in New York clinics, and the majority of them by our ablest surgeons; the fault lay not in the technic of the operator, but in the method. Of these cases

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Cramer: Klinischer Bericht über 96 Diaphysenstümpfe des ober- resp. Unterschenkels, Arch. f. Orthop., Mechanotherapie und Unfallchir., 1905, iii, 101.

12 healed by primary union and 1 by secondary intention; all had the usual artificial limbs applied at the end of three months. Bräunig² in 122 amputations of the thigh and leg found only a few with end-bearing stumps. Salomon³ and others report similar results.

In the osteoplastic (Fig. 2) the raw bone surface and the medullary canal are covered by a bone flap whose periosteum has a normal connection. In this way the possibility of painful bony outgrowths, developing from the periosteum and marrow, is avoided. Given ideal conditions this method yields

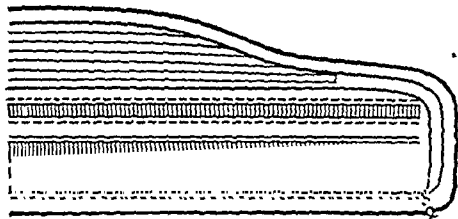


Fig. 4.—Tendinoplastic method of treating the bone.

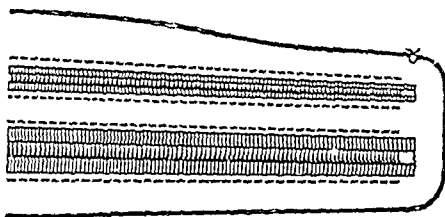


Fig. 5.—Aperiosteal method of treating the bone.

splendid results (Fig. 3), but it requires considerable practice to cut and fit the bone flap. In traumatic cases and cases of doubtful asepsis it is unsuited. If infection of the wound or necrosis of the bone flap occurs the result will probably be a failure. Pirogoff's⁴ operation (1853) furnished an osteoplastic end-bearing stump. Contrary to what most writers have asserted, Pirogoff attached only a secondary importance to the osteoplastic feature; his main endeavor was

plastic transcondylar amputation. In spite of the favorable stumps obtained by these methods, surgery was slow to grasp the underlying principle, and it is to the efforts of Bier⁶ and his pupils that the development of the modern osteoplastic methods is due. Bier's original view, that the raw surface of the bone and medullary canal remain tender, was erroneous; he now accepts that in a large measure the tenderness is due to the irregular bony outgrowths from the periosteum and endosteum of the medullary canal. Binnie⁷ has modified Bier's method and uses a free bone transplant; this simplifies the technic and, according to Binnie, yields equally good results.

The tendinoplastic method (Duval-Wilms⁸) aims to cover the sawn bone by a broad tendon which is stitched to the periosteum (Fig. 4). This method is of limited application, although good functional stumps can be obtained at the knee, ankle and humerus, where

the quadriceps tendon, Achilles tendon and triceps are available. It is of special value as a covering in the finger and metacarpal amputations.

The aperiosteal method aims to produce a painless, supporting stump, capable of early functional use (Figs. 5 and 6). Hirsch's⁹ investigation (1899) showed that in the old method of stripping up a periosteal cuff to cover the bone, many shreds of periosteum resulted. These shreds, still retaining their

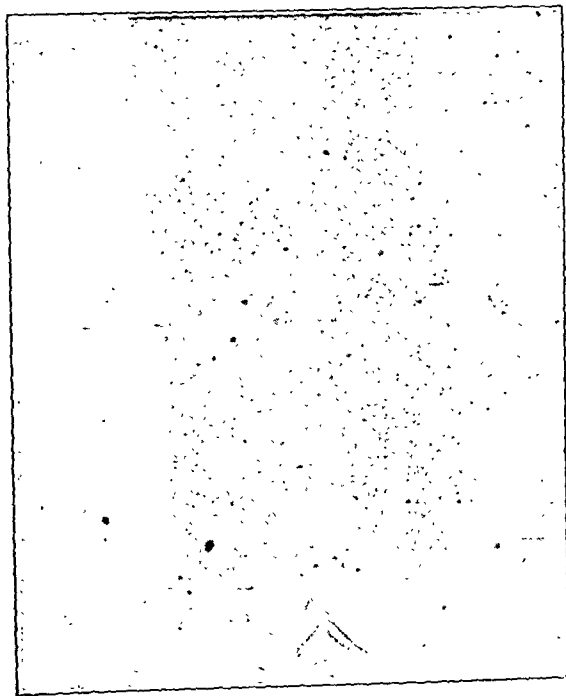


Fig. 6.—Result of an aperiosteal amputation of the thigh in a man aged 64. Note smooth stump end and absence of bone atrophy. Patient was able to bear his whole weight on the end of the stump within fourteen days, and walked on a provisional peg leg within eighteen days.



Fig. 7.—Painful, conical stump resulting from periosteal amputation of the leg.

to provide a procedure which would overcome the difficulties encountered in dissecting the heel flap of a Syme operation. Gritti⁵ in 1857 introduced his osteo-

2. Bräunig: Über die Unterschenkelamputationen der Rostocker Universitätsklinik, Verhandl. d. nord-westdeuts. Chir., October, 1911; Zentralbl. f. Chir., 1911, p. 1630.

3. Salomon: Die heute gebräuchlichste Methode der Unterschenkelamputation, Verhandl. d. nord-westdeuts. Chir., October, 1911; Zentralbl. f. Chir., 1911, p. 1628.

4. Pirogoff: Osteoplastische Verlängerung der Unterschenkelknochen bei der Exarticulation des Fusses, Leipsic, 1854.

5. Gritti: Ann. Univ. d. M-d., Milan, 1857; Cong. méd. de toutes les nations (1869) Bologne, 1870, p. 357.

6. Bier: Ueber plastische Bildung eines künstlichen Fusses aus der mit ihren weichteilen bedeckten Tibia nach tiefen Unterschenkelamputationen., Deutsch. Ztschr. f. Chir., 1892, xxxiv, 436; Ueber plastische Bildung tragfähiger Stümpfe nach Unterschenkelamputation, Verhandl. d. deutsch. Gesellsch. f. Chir., 1893, ii, 1; Weitere Mitteilungen über tragfähige Amputationsstümpfe im Bereich der Diaphyse, Arch. f. klin. Chir., 1895, i, 356; Operationstechnik für tragfähige Amputationsstümpfe, Zentralbl. f. Chir., 1897, p. 833; Samml. klin. Vortr., N. F., 1900, p. 264.

7. Binnie: Amputation of Leg, Quatrième Cong. de la Soc. Internat. de Chir., 1914.

8. Wilms: Zentralbl. f. Chir., 1902, p. 721; Verhandl. der deutsch. Gesellsch. f. Chir., 1904, i, 356.

9. Erzielung tragfähiger Stümpfe durch Nachbehandlung, Deutsch. med. Wehnschr., 1899, p. 776; Vorstellung eines Unterschenkelamputierten mit (durch Nachbehandlung) tragfähigen Stumpf und neuer Prothese, Verhandl. d. deutsch. Gesellsch. f. Chir., 1900, ii, 358; Einige Bemerkungen über die Behandlung der Gliederstümpfe, Deutsch. med. Wehnschr., 1908, xxxiv, 464.

primitive osteogenetic function, produced painful, bony spikes which interfered with the early functional use of the stump (Figs. 7, 8, 9 and 10). For this reason Hirsch reintroduced the Celsian method of dividing the bone and periosteum at the same level, adding to it massage, exercise and early functional use. Bunge¹⁰ (1900) went a step further and advocated the removal of 1 cm. of the periosteum, and the scraping out of the bone-marrow for a similar dis-

as the inflammation leads to the production of exostoses.

Salomon reports similar results, and concludes that the aperiosteal method should be the normal procedure in amputations. In the production of end-bearing stumps, the prevention of atrophy is of as great importance as the prevention of bony outgrowths. The best-



Fig. 8.—Subperiosteal disarticulation of the hip. Patient was unable to wear artificial leg on account of the pain caused by the bony spicules. Note bone atrophy, result of disuse.

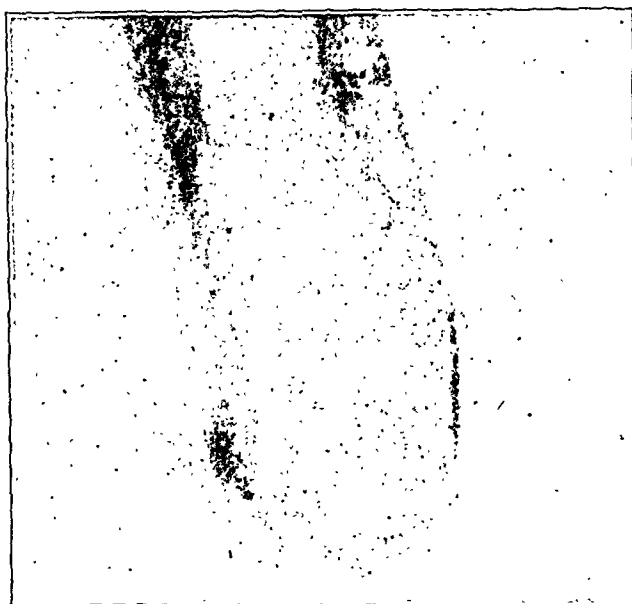


Fig. 9.—Painful stump due to bony spicules resulting from periosteal amputation of the thigh.

tance. The correctness of Hirsch's and Bunge's views are substantiated by von Eiselsberg,¹¹ Kocher,¹² Moskowitz, Witzel¹³ and Ranzi.¹⁴ This method had an extensive practical test in the Russian-Japanese and Balkan wars. At the International Surgical Congress of 1914, Ranzi, from von Eiselsberg's clinic, reported on the results in aperiosteal amputations of the leg. In 75 cases, between the years 1901-1913, the end-results on 40 of these were obtained; 25 healed by primary union, 15 by secondary intention. In 31 cases end-bearing stumps were obtained, in 7 cases the results were fair, in 2 cases the results were not end-bearing. In the 15 cases which healed by secondary intention, 10 were completely satisfactory, 4 were fair and only 1 a failure. The ages of the patients varied from 20 to 80 years. The remarkable feature of this report is the number of successful stumps which were obtained in the infected cases. It is in just these cases that the periosteal method fails,

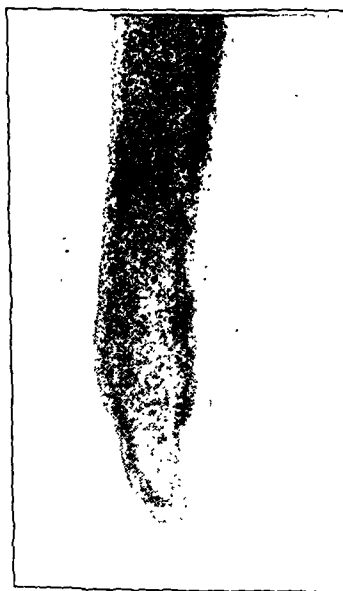


Fig. 10.—A painful conical stump after periosteal amputation of the thigh. Patient was unable to bear any weight.

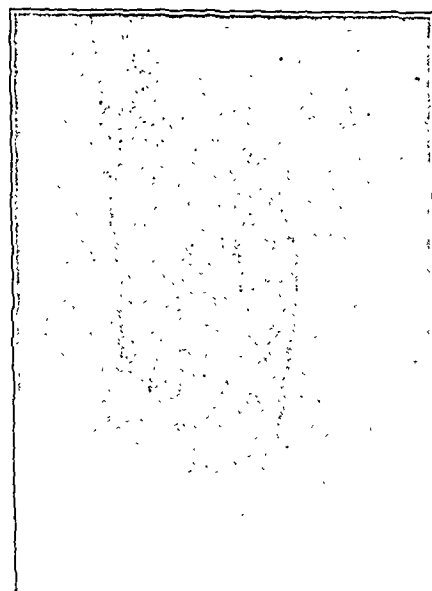


Fig. 11.—Painful atrophic stump after periosteal amputation of the thigh, showing baneful results of disuse, stump shrinkers, etc.

10. Bunge: Zur Technik und Kasuistik der osteoplastischen Unterschenkelamputation nach Bier, *Deutsch. med. Wchnschr.*, 1899, p. 833; Weitere Beiträge zur Tragfähigkeit der Diaphysenstumpfe, *Verhandl. d. deutsch. Gesellsch. f. Chir.*, 1901, i, 163; 1902, i, 54; 1904, i, 137; Zur Technik der Erzielung tragfähiger Diaphysenstumpfe ohne Osteoplastik, *Beitr. z. klin. Chir.*, 1905, xlvii, 808.

11. Von Eiselsberg: Dem. d. k.-k. Ges. der Aerzte in Wien am 12. Februar, 1904, *Wien. klin. Wchnschr.*, 1904, p. 202.

12. Kocher: *Chirurgische Operationslehre*, Ed. 5; Jena, G. Fischer, 1907.

13. Witzel: *Die Amputation*, *Rapports, Quatrième Cong. de la Soc. Internat. de Chir.*, 1914.

14. Ranzi: *Ueber Unterschenkelamputation*, *Rapports Quatrième Cong. de la Soc. Internat. de Chir.*, 1914.

formed stump if not quickly put to use as a real support may become atrophied and useless (Figs. 11 and 12).

APERIOSTEAL METHOD

Technic.—Sterilize skin with tincture of iodine. Use temporary hemostasis by ligature; permanent hemostasis by Perthes¹⁵ pneumatic tourniquet. Employ the oblique circular incision of Kocher, or if flaps are indicated cut and suture

15. Perthes: *Zentralbl. f. Chir.*, 1910, xxxi, No. 31, Beilage, 13.

according to Jackson's¹⁰ method. Plan the incision so that the cicatrix will not be subjected to terminal pressure; if available use skin accustomed to pressure. Remove the periosteum for a distance of 1 cm. above the saw-line; spoon out the medullary canal for a similar distance (Fig. 13). Before dividing inject the large nerve-trunks with 1 per cent. solution of novocain. Draw the nerves well down; make a smooth division. Provide for the muscular balance of the stump by suturing the antagonistic muscles. If important muscular insertions are destroyed, new ones must be provided.



Fig. 12. — Fracture occurring in an atrophic stump following a periosteal amputation of the thigh. The stump was not put to early functional use, atrophy resulted and a light trauma fractured the bone. Weight-bearing has improved under exercises.

After-Treatment.—Put the patient to bed with the leg elevated. As soon as the wound is healed begin Hirsch's medicomechanical treatment. Massage the stump twice daily, and after each treatment rub in a 2 per cent. solution of salicylic acid in olive-oil. At night bathe in a warm sodium carbonate solution. Protect the stump with cotton wool. Place a box at the foot of the bed and have the patient press the stump against it for from five to ten minutes three times a day, then four times, finally every hour. After each treatment energetically flex and extend the hip and knee. Now begin standing exercises. Rest the stump on a bran-bag, at first placing the weight evenly on both legs; later place all the weight on the stump. At the end of two weeks the patient should be able to wear a peg leg (Figs 14 and 15), later a permanent prosthetic appliance which directly receives the weight through the end of the stump.

I do not wish to convey the impression that the Roentgen-ray findings are final, for it is possible to have a perfectly smooth stump which is functionally useless, and on the other hand, a rough bone and a good functional stump. I do believe, however, that 80 per cent. of the painful stumps are due to atrophy and exostoses; in the remaining 20 per cent. the causes will be progressive osteitis, periostitis, neuritis

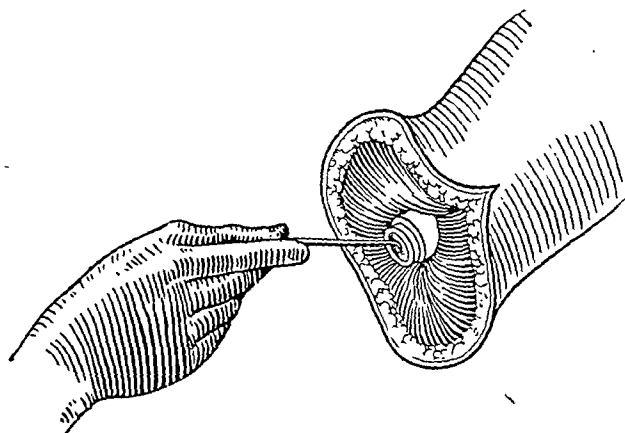


Fig. 13.—Aperiosteal method; spooning out the marrow (after Muller).

from compression of the nerves, diseases of the vessels and adherent cicatrices. While any of the four methods may yield useful end-bearing stumps, without early functional use any of them may fail.

CONCLUSIONS

The osteoplastic is the ideal method, but requires ideal conditions; the tendinoplastic is of limited value;

the periosteal, although employed by the majority of surgeons of this country, is inferior to the other methods; while the aperiosteal, in the advent of complications in healing, is the only method which is likely to furnish a useful end-bearing stump; it is the simplest, the most universally applicable and the most practicable.

ABSTRACT OF DISCUSSION

DR. F. J. COTTON, Boston: This is another nail in the coffin of the periosteum. There was no regeneration without it years ago and I suppose that was the reason why we were always taught to turn back the cuffs on an amputation. It has been a long while since I paid attention to periosteal cuffs. I find stumps get along perfectly well when one does not take that trouble. Of this subject of aperiosteal stump I know nothing from personal experience. I know one obtains a good stump when the periosteum is cut off flush. Spicules of bone should not be in any stump. The osteoplastic operation is not ordinarily applicable when amputating after trauma, nor do most of us feel when operating fairly close to a denuded surface of a mangled limb with the extra chance of sepsis, like introducing bone grafts. So that it comes down to aperiosteal operation or using the periosteal cuff. It seems interesting and sounds as if it were perfectly right. The artificial-leg makers say that they

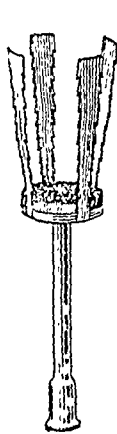


Fig. 14.—Bier's provisional peg leg.

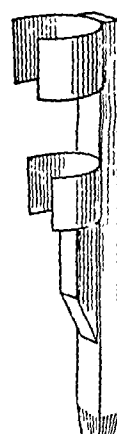
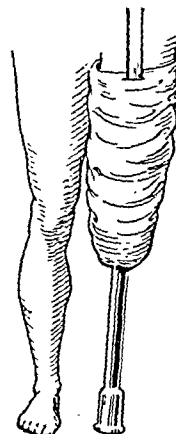


Fig. 15.—Hirsch's provisional peg legs.

don't care anything about it. I have tried for a stump that would stand an upward pull. For that reason it seemed to me that if the bone end were smooth and if muscle or tendon could be gotten comfortably over a smooth bone surface that is the thing to do. I may be wrong. I hope Dr. Lyle will tell us whether the end-bearing stump is the one wanted. End-bearing function has not been prominent in my mind for recent amputation work. Stumps that make trouble seem to be mainly due to two things, neuromas from carelessness in cutting back the nerves, and cases in which there is too close adhesion of the skin, and too little skin for the bone. These are the cases which seem to make trouble. A minor point is that at least one of the stumps shown was apparently a question of persistent growth as we get it in the stumps in children. I would ask Dr. Lyle whether a stump of this sort, which would seem to be more necessarily close to the skin than the ordinary type, is more or less likely to show that thrusting forward of the bone?

DR. HENRY M. LYLE, New York: Regarding the use of the stump and the selection of an artificial limb two cardinal points are to be considered: (1) The stump must be put to early functional use; (2) the limb must be so constructed that the whole weight is transmitted through the stump to the artificial limb. These two principles are at variance with the common practice of advising the patient to wait three months until the stump has shrunk before fitting the limb. It is in these three months of inactivity that atrophy is produced, which condition is further increased by wearing

an artificial leg so constructed that little or no weight is borne on the end of the stump. By developing the stump according to the aperiosteal method these results are avoided. It is extremely difficult to convince an artificial-limb maker that it is possible to obtain a painless end-bearing diaphyseal stump. Investigation of some of the patients they receive to be fitted will explain their point of view. Recently, in examining seventeen cases, considered by instrument makers to be ideal, three only were end-bearing, of these two were Pirogoff's, one a Gritti. There was not one true periosteal amputation through the shaft. Whenever possible I cover the bone with muscle, using Jackson's method; but in the infected cases in which the wound was left to granulate I had successful results when the bone was covered only by skin. I remove 1 cm. of the periosteum and spoon out 1 cm. of the marrow canal. Necrosis of bone following the removal of 1 inch of the periosteum has been reported; the difference between a centimeter and an inch must not be overlooked. After-treatment, exercises and early functional use are as important as the removal of the periosteum. In the production of a conical stump two factors are to be considered; the relatively rapid growth of the bone and the atrophy of the muscles. For these reasons the cineplastic amputation will give the best result, as it produces an active muscular development which tends to maintain the balance of growth between the bone and the soft parts.

SPOROTRICHOSIS IN THE MISSISSIPPI BASIN

RICHARD L. SUTTON, M.D.

KANSAS CITY, MO.

In a recent statistical study Hamburger¹ reviewed the reported instances of sporotrichal infection in man occurring in the United States during the past fifteen years. Of the fifty-eight cases recorded all were of the cutaneous variety, and of the fifty in which the seat of primary infection was stated, the organism gained entrance at some point on the hand or forearm in thirty-eight. The geographic distribution of the cases was of interest. Fifty-four of the patients became infected while residing somewhere in the region comprising the Mississippi River basin. Of the ten cases reported since the publication of Hamburger's first paper, by Newman,² Rhamy and Carey,³ Sutton,⁴ Adams,⁵ Ravogli,⁶ Cooke,⁷ Miller,⁸ Hamburger,⁹ and Wilder and McCullough,¹⁰ nine were from this territory.

Despite the publicity given this disorder by the numerous examples that have been reported, many instances of sporotrichal infection undoubtedly escape recognition. Judging from a rather extensive correspondence with physicians throughout the Middle West, I should say that there are few practitioners of wide clinical experience who have not at some time encountered one or more cases of this disease in their practice. Unfortunately, however, not all of us are in a position to keep closely in touch with current medical literature, and consequently there are many

busy practitioners who have never even heard of sporotrichosis. For this reason, I believe that all recognized cases of the affection should be reported, during the next few years at least, in order to disseminate as widely as possible a knowledge of its characteristic symptomatology. In the past eight months I have seen, or been consulted concerning, five new clinical cases. In each instance the history was taken by the physician in charge, and I am indebted to these various gentlemen for the privilege of making a collective report.



Fig. 1 (Case 1).—Showing primary lesion on knuckle, and secondary nodules on wrist and forearm.

CASE REPORTS

CASE 1.—A. R., male, married, aged 24, assistant division superintendent, Metropolitan Street Railway; under the care of Dr. Frank Iuen, Kansas City. Nov. 11, 1913, while inspecting a car, the patient struck his left hand against the edge of a sand-box, and sustained a superficial wound about 2 cm. in length in the region of the second knuckle. The hand was bathed and bound up in a handkerchief, and no further attention was paid to the wound that day. November 13 the wound became inflamed and painful, and on the fourteenth medical advice was sought. At that time the symptoms were those of a mild streptococcic cellulitis. The wound was cleansed, and tincture of iodine freely applied, the patient being advised to keep the hand immersed in hot saline solution for a period of five or six hours each day. Considerable improvement resulted, and it was thought that the lesion would give rise to no further trouble. On November 19,

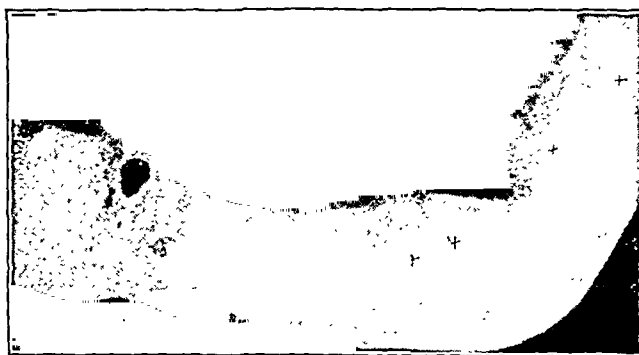


Fig. 2 (Case 2).—Large ulcer shows location of primary lesion. Cross marks indicate location of abscesses on forearm and arm.

however, a hard, oval lump, about 1.5 cm. in diameter, appeared on the outer surface of the forearm, about 20 cm. below the elbow. The tumor was dark red in color, painless, and lay in, or just beneath, the epidermis. The epitrochlear lymph-nodes were palpable and tender. On the following day it was found that three new tumors had developed, all on the dorsal surface of the left hand and wrist. They were arranged in a linear manner, extending upward toward the elbow. The one nearest the open lesion was reddened and painful, the others were almost duplicates of the tumor that had first developed on the forearm. Two days later the lowermost tumor became fluctuant, and that night it broke

1. Hamburger, Walter W.: Sporotrichosis in Man, *THE JOURNAL A. M. A.*, Nov. 2, 1912, p. 1590.
2. Newman: *Western Med. Rev.*, 1912, p. 646.
3. Rhamy and Carey: *Jour. Indiana State Med. Assn.*, 1913, p. 274.
4. Sutton, Richard L.: The Occasional Clinical Resemblance of Blastomycosis and Syphilis to Sporotrichosis, *THE JOURNAL A. M. A.*, Jan. 11, 1913, p. 115.
5. Adams, G. S.: Another Case of Sporotrichal Infection in Man, *THE JOURNAL A. M. A.*, June 7, 1913, p. 1784.
6. Ravogli: *Lancet-Clinic*, Aug. 2, 1913.
7. Cooke: *Texas Med. Jour.*, 1913, ix, 190.
8. Miller: *Ann. Surg.*, 1913, lviii, 540.
9. Hamburger: *Illinois Med. Jour.*, 1914, xxx, 99.
10. Wilder, W. H., and McCullough, Clifford P.: Sporotrichosis of the Eye, *THE JOURNAL A. M. A.*, April 11, 1914, p. 1156.

into the primary wound, considerable amounts of brownish-yellow, blood-streaked pus being discharged.

Treatment.—Under the circumstances it was thought best to incise the abscess on the dorsum of the hand in order to provide free drainage. This was done, and dressings moistened with 1 per cent. liquor cresolis compositus applied. November 14, and again November 18, combined bacterin (stock) was given, but without appreciable benefit. Decem-

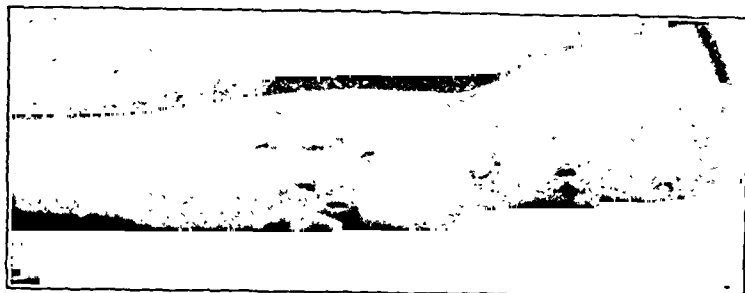


Fig. 3 (Case 3).—Lesions on inner surface of arm and forearm.

ber 2, the lesions on the forearm having remained practically unchanged, the patient was placed on potassium iodid, the dosage to be gradually increased. All of the nodules had completely disappeared at the end of sixteen days.

CASE 2.—E. A. B., male, grocer's clerk, aged 26; under the care of Dr. French M. Smith, Lyndon, Kan. Early in September, 1913, the patient sustained a slight puncture wound from a pine splinter on the dorsal surface of the left hand



Fig. 4 (Case 3).—Showing point of inoculation on little finger, and ulcers which resulted from incising abscesses on forearm and arm. About eight months' duration.

near the base of the thumb. He thought nothing of the injury at the time, but about one week later a small ulcer began to develop at the site of the wound. The lesion became quite tender and painful, and considerable amounts of thick, grayish-yellow pus were discharged. The ulcerated area gradually increased in size until it had attained a diameter of 2 or 3 cm. The edges were undermined, and the borders red and congested. September 20 the family physician was consulted. A tentative diagnosis of furunculosis was made, and flax-seed and bread and milk poultices were prescribed. Later, ointments, dusting powders and caustics were applied. About October 15 a hard, indurated nodule appeared on the wrist near the point of infection

and slowly increased in size until at the end of a week it was as large as a hazelnut. A tiny fistulous opening developed near the summit of the lesion and discharged viscid, sticky, grayish-yellow pus. In the course of a few days the tumor broke down completely and a small ulcer was formed. After the appearance of this nodule, however, and prior to the occurrence of ulceration, several (seven in all) other nodules appeared on the forearm and upper arm. The patient experienced no inconvenience from the presence of the lesions.

Dr. Smith saw the patient for the first time in December, 1913. The ulcers on the hand were deep and crateriform, with ragged, undermined edges, and were partially covered with yellowish, stringy pus. There were seven large, and numerous small, nodules extending in a chain-like manner from the wrist to the shoulder. The axillary and epitrochlear lymph-nodes were not palpable. The large tumors were dark red in color and hard and resistant to the touch, and were tightly adherent to the overlying skin. A diagnosis of sporotrichosis was made and afterward confirmed by cultures taken from both of the ulcerated lesions. The patient was placed on a saturated solution of potassium iodid, 15 drops, well diluted, after each meal, the amount being gradually increased to 40 drops, t. i. d., then slowly reduced to 20 drops. Locally, a 1:2,000 mercuric chlorid dressing was applied, and renewed morning and evening until the discharge had noticeably decreased, when a dithymol-di-iodid dusting powder was substituted. Recovery was prompt and uneventful.

CASE 3.—J. F. J., male, married, farmer, aged 42. Under the care of Dr. Isaac W. Amerman, Nevada, Mo. Dec. 17, 1913, the patient sustained a slight wound of the dorsal surface of the right little finger. Despite the application of various household remedies the lesion refused to heal, and when Dr. Amerman was first consulted, early in January, a second ulcer had appeared on the adjacent knuckle, and a small nodular mass, the size of a large hazelnut, had developed on the dorsal surface of the hand just below the wrist. During the course of the next twelve weeks numerous other nodules developed on the forearm and arm. The majority

became soft and fluctuant within ten days or a fortnight, and were incised, drained and swabbed out with tincture of iodine. In spite of the most rigorous surgical measures, however, new lesions continued to develop. When I first saw the patient, about ten weeks later, the ulcers were still unhealed.

The arm was swollen but little, and there was no pain. Owing to the thorough course of treatment the wounds had received, all efforts to secure cultures of the sporothrix resulted in failure. Following a fortnight of treatment with potassium iodid, all of the lesions healed promptly and with comparatively slight scarring.

CASE 4.—W. E. D., male, married, farmer, aged 62. Under the care of Dr. Q. M. Brown, Nevada, Mo. Ten weeks prior

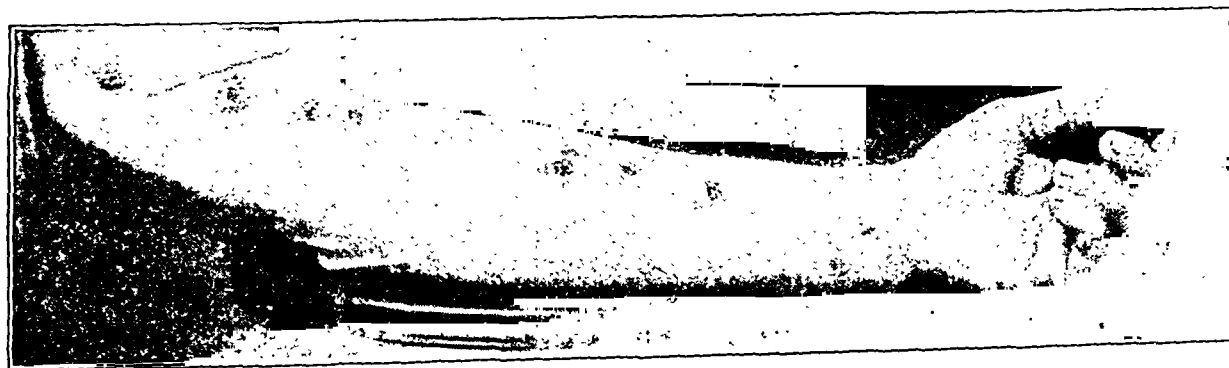


Fig. 5 (Case 4).—Showing character and distribution of lesions, ten weeks after onset of disease.

to the time of consultation the patient first noticed the presence of a small papule on the inner side of his left wrist. There was no history of trauma. In the course of a week the lesion increased in size until it was the diameter of a dime. It then broke down in the center, the resulting ulcer being purplish in color and painless, with a slightly elevated, indurated border. A few days later a small, oval tumor appeared on the anterior surface of the wrist, just above the initial lesion, and this was followed, at intervals of

three days to a fortnight, by a series of purplish nodules extending in an irregular line from the wrist to the shoulder. The lesions were from 2 to 4 cm. in diameter and firmly imbedded in the skin. After a lesion had existed three or four weeks it would break down in the center, forming a soft, fluctuant tumor, the overlying skin remaining intact. Nine weeks after the onset of the disease the abscesses were opened and drained by the family physician. The epitrochlear and axillary lymph-nodes were not palpable at any time. Probably because of the energetic treatment employed, cultural tests instituted at the end of the tenth week were negative.

CASE 5.—J. B., male, ice-man, aged about 36. Under the care of Dr. Edward Asbell, Kansas City, Kan. Early in September, 1913, this patient, who had just entered the employ of the City Ice Company, reported to Dr. W. A. Wilson, the company's surgeon, for advice concerning an ulcer on his right forefinger. The lesion was a sharply circumscribed one, about 3 cm. in diameter, dark red in color, and only slightly painful. The injured member was thoroughly cleansed and antiseptic dressing applied and the patient instructed to return as necessary for further treatment. Despite the careful employment of modern surgical methods, the wound did not heal, however, and the patient, becoming discouraged, consulted his family physician, Dr. Asbell. During the months of September and October a dozen or more small, sharply circumscribed cutaneous nodules developed on the outer surface of the forearm between the first knuckle and the fold of the elbow. In the course of a fortnight or so these tumors broke down, the resulting abscesses remaining subcutaneous. The cavities were opened, drained and curetted, and iodine and other antiseptics applied. The lesions refused to heal, however, and when I saw the case in April, 1914, both physician and patient stated that there had been little change during the past four months. At that time the case was a medicolegal one, the patient having brought suit against the City Ice Company for damages, and the plaintiff's attorney refused to allow the removal of material for cultural examination.



Fig. 6 (Case 5).—Showing characteristic distribution of lesions. The scaling and discoloration of the surrounding skin is due to the long continued use of antiseptics. (Photograph about eight months after onset of disease.)

CONCLUSIONS

Cutaneous sporotrichosis is a comparatively common disorder in the Middle West. In every suspected case a bacteriologic test should be made as early as possible, otherwise the employment of powerful antiseptics, such as iodine, may render cultural examinations negative even though the fungus is still present. In the majority of instances the symptomatology of the affection is so characteristic that a mistake in diagnosis is hardly possible if one is at all familiar with the disease.

Commerce Building.

The Man Behind the Gun.—Every art is eventually destroyed by the machinery it creates for itself, and medicine is in a like danger. The practitioner by too persistent reliance on his instruments of precision falls into the situation of one who has eyes and sees not, and having ears hears not. He becomes so ignorant of the principles of diagnosis that he will perform a laparotomy to elucidate a simple abdominal condition, or have a Roentgen-ray plate made to disclose what a trained eye would discover for itself. —*Canadian Med. Assn. Jour.*

BILATERAL PERIPHERAL FACIAL PALSY

WITH REPORT OF CASE

TOM BENTLEY THROCKMORTON, B.Sc., M.D.

DES MOINES, IOWA

The occurrence of bilateral facial paralysis, whether of central or peripheral origin, is of sufficient rarity to warrant a due consideration of the subject whenever an opportunity for the study of a case is given. A unilateral facial paralysis is by no means an uncommon condition and results from a lesion involving some part of the facial nervous mechanism between the cortical origin of its cells in the lower third of the motor area of the brain and the ultimate distribution of the facial fibers in the periphery of the human economy. In the central type, in which only the lower quadrant of the face is involved, the lesion is usually due to tumor formation, hemorrhage, degenerative conditions, syphilitic manifestations, etc., whereas any of these factors may also be instrumental in producing a paralysis of the peripheral type, but usually a history of trauma, middle-ear disease, exposure to cold, toxic and infectious conditions, alcoholism, etc., will be obtained.

Bilateral facial palsies, however, are much more rare than are unilateral phenomena and may be caused by any of the factors above mentioned implicating both sides of the facial mechanism. Sometimes they are the result of such a peripheral nerve involvement as may accompany a general multiple neuritis due to toxic substances, such as lead, alcohol, etc. That one may encounter a true Bell's palsy which simultaneously, or almost simultaneously, affects the two sides is also possible, but the rarity of localized lesions involving only the seventh pair of cranial nerves seems evident from the frugal statements bearing on the subject, found in recognized neurologic works and literature. That lesions simultaneously involving some portion of the peripheral distribution of the facial nerves do occur is evident from the following case report.

REPORT OF CASE

An unmarried white man, aged 34, native of Iowa, a singing evangelist, consulted me Jan. 7, 1914, for bilateral facial paralysis. The onset of the paralysis had been sudden and the duration had extended over a period of some seven months.

Family History.—On the paternal side, nothing of direct bearing on the case could be elicited from the history. His maternal grandfather, however, at the age of 50 sustained a unilateral facial paralysis (Bell's type), and the patient's mother at 65 suffered from a similar condition for a period of some three months. No definite cause could be ascertained for the onset of the paralysis in either case but recovery ensued in both instances.

Personal History.—Patient as a rule had always enjoyed good health and had never had any serious illness or affliction until the onset of present trouble. Had measles at the age of 16 without sequelae, one attack of "grip" eleven years ago and another attack about four years ago, from which good recoveries were made. Has had three attacks of what he termed "rheumatism" in which the muscles about one shoulder were involved. The attacks lasted about a day but there were no inflammatory changes, joint involvement or other untoward phenomena. For the last ten or twelve years he has been more or less constipated. Does not use tea, coffee, narcotics or alcohol.

Present Illness.—May 24, 1913, while engaged in church work in Wisconsin, he was taken with an attack of the "grip." He stated that he felt quite ill, fever rose above

104 F., he had several chills, headache, and in a few hours had general aches and pains. On the third day the temperature reached normal, headache and general aches subsided and although he felt weak, he returned to his work and conducted a musical rehearsal. On the evening of the fourth day he became quite heated following the physical exertion of conducting a large chorus choir. The weather was warm and humid and he occupied a seat near a window which was lowered from the top, exposing the back of his head and neck to a draft.

Two or three days later, while at the breakfast table, he noticed that his cheeks felt rather strange to the touch and that they had a tendency to droop. Food, which he says tasted normal, collected between the cheeks and the teeth, and necessitated the cheeks being pushed inward in order to clear away the particles. On examining his face in the mirror, he found that both sides were completely and absolutely paralyzed. There was total inability to wrinkle the forehead, elevate the eyebrows, close the eyes, dilate the nostrils, move the ears, or to move any of the muscles of expression. He then recalled that one or two evenings before the onset of the paralysis he had suffered from pains in the region of the angles of the jaws and that gradually the pains had radiated backward behind the ears. Following the

sense of taste was never lost but apparently there must have been some diminution, for the patient was obliged to season his food with far greater quantities of salt than he formerly was accustomed to do.

Apparently the treatment instituted consisted largely of anodynes, measures to relieve the local congestion, and nerve tonics. During the following September, the patient began using, of his own accord, the faradic current and the statement was made that at times it seemed to make some of the muscles contract. Galvanism was never used.

Examination.—Inspection of the face, when no voluntary effort at contraction of the facial muscles is made, does not reveal any special change or defect. There is an absence of any transverse lines or wrinkles across the forehead and the nasoabial lines are considerably erased, yet apparently equally so. The moment that voluntary effort is made to move the muscles, however, the bilateral palsied condition of the face at once becomes markedly apparent. The paralysis is more noticeable on the left side, there being a trifle more ability to elevate the outer angle of the right eyebrow, and on marked effort the right corner of the mouth can be retracted more than is possible on the left side. The movements, however, are greatly limited, considering the range of normal muscular action.

The eyes can be opened and closed at will, but any attempt to close them tightly meets with ill success. All efforts at talking or laughing brings out the inequality between the palsied sides, and attempts to whistle, purse the lips, wrinkle the forehead, expose the teeth, etc., are unavailing. Speech is not interfered with so far as linguals are concerned, but there is a very noticeable defect in the enunciation of words and letters in which labial sounds play an important part. There is hardly a perceptible movement of the lips during the act of talking.

The tongue protrudes in the median line, is covered equally with a whitish fur and its lateral margins are somewhat fissured. Sensation is preserved, but various tests with acid, sweet, bitter and salty materials indicate a possible diminution of the sense of taste, particularly in the anterior two-thirds of the organ. The sense of smell is preserved, vision and range of ocular movements are normal, ptosis, diplopia, nystagmus, hemianopsia and abnormal pupillary phenomena, are absent. The masseter groups are firm and contract

equally, and no disturbance of sensation in the distribution of the trigeminals could be elicited. Hearing is retained and about equally so, and no abnormal findings indicative of the involvement of the ninth, tenth, eleventh or twelfth pairs of cranial nerves can be found. The uvula hangs in the median line, and the soft palate contracts equally when "ah" is sounded. Station and gait are normal and the deep reflexes of the extremities are all preserved.

As may well be expected in a case in which improvement has been gradually taking place, the electrical changes are not typical of a complete peripheral nerve degeneration. The response to faradism and galvanism are about equal on the left side, while on the right side faradism produces a little more pronounced contracture than does galvanism when the motor points are stimulated.

That the case is one in which the peripheral branches of the seventh pair of cranial nerves were simultaneously involved, needs, I feel, no special comment. That the process extended upward in the Fallopian canals as high as the points where the chordi tympani branches are given off, is evident from the diminished taste sensation and salivary secretion.



Fig. 1.—Showing expression of patient when facial muscles are at rest.



Fig. 2.—Maximum voluntary movement on effort to elevate eyebrows.

paralysis, the pain became exceedingly severe at times, so much so that a hypodermatic injection was given by the attending physician to alleviate the suffering. Paroxysmal pains radiated over the scalp posteriorly and gradually became more or less localized in the median line of the neck a little below the external occipital protuberance. He does not recall having any tinnitus, pain in the ears, or increased or decreased sensitiveness to low or high-pitched sounds. No herpes developed about the ears. He was confined to his bed at irregular intervals during the week following the onset of the paralysis but was obliged to remain quiet for a period of some three weeks following, owing to weakness.

There was no return of motion to any of the affected muscles until ten weeks after the paralysis, when a very slight elevation of the outer angle of the right eyebrow could be accomplished. Two weeks later there was a little return of power to some of the oral muscles, so that the corners of the mouth could be retracted very slightly. Very gradually there was a little return of power to the facial muscles, but the first marked return of motion in the occipitofrontalis was not until between five and six months after the paralytic onset and was then noticed on the right side only. For a long time the salivary flow was greatly diminished, but of late this condition has improved. The

The absence of hyperacusis or painful sensitiveness to musical notes of low pitch, as well as lack of evidence of pain or a herpetic eruption involving the auricles and external auditory canals, shows that the process did not extend to the nerve supplying the stapedius, or to the geniculate ganglion. The etiologic factor or factors, however, that may have been responsible for the bringing about of the bilateral facial paralysis, is not only a question of considerable interest but perhaps of some speculation as well. The too sudden cooling off in a draft following the marked physical exertion incident to conducting a large chorus, would give, of itself, in the absence of other possible causes, a goodly and sufficient reason for believing it to be the direct cause. This becomes all the more apparent when we realize that in a large number of cases (73 per cent. according to Oppenheim) in hitherto healthy individuals, this condition has been known to follow as a direct consequence of a chill, a draft, washing the head, sleeping with open windows, etc. The question, however, as to the possibility of an infectious or toxic origin due to an influenza infection

genital narrowing of the stylomastoid foramen in certain persons predisposes them to a compression of the nerve on any slight congestion of its trunk. Such a theory is not only in harmony with facts incident to the case under consideration, but may also give a clew as to why one attack of facial palsy predisposes to another, and why, in a certain percentage of cases (7 per cent. according to Starr) there is a recurrence of the disease.

CONCLUSIONS

From the foregoing statements I feel that the following conclusions may be justified:

1. Bilateral facial paralysis is much more rare than is the unilateral type.

2. While exposure to cold, drafts, localized congestive conditions, infectious and toxic processes, etc., seem to be largely responsible as direct agents in the production of the peripheral type of facial paralysis, the relationship between the nerve-trunk and its bony canal (Fallopian aqueduct) may not be altogether a negligible factor.

3. Congenital narrowing or stenosis of the Fallopian aqueduct may be more instrumental as a true basic causal factor in the production of peripheral facial palsy than is commonly believed.

4. Hereditary predisposition to peripheral facial paralysis may be present in some individuals.

407 Equitable Bldg.



Fig. 3.—Maximum voluntary movement on effort to close the eyes tightly and to retract the corners of mouth.



Fig. 4.—Facial expression of patient during laughter.

is not to be wholly ignored. Paralysis of the facial nerve has been known to follow such diseases as diphtheria, and mumps, and, as pointed out by Oppenheim, "a facial paralysis and an otitis may be produced simultaneously by the same cause, chill, infective disease (influenza, typhoid, etc.)" It is by no means difficult to understand the *modus operandi* in those cases in which parotitis is present, or for that matter where an otitis exists. That there is direct involvement, in such instances, of the facial nerve at some place along its course in the bony canal or after its exit from the same, by an inflammatory process or resultant edema is, I am sure, perfectly obvious. In this case, if an influenza infection played any rôle as an exciting agent, it would appear to be in the absence of any associated otitic involvement. That the paralysis may have resulted from a combination of an infectious process and chilling is, it is needless to state, well within the realm of possibilities. The occurrence of a facial palsy of the peripheral type, however, in members of three generations of direct descendants, may be worthy of more than a passing glance. Philip believes that a con-

North Dakota. He died at his home in Olmstead County of undoubted pellagra, June 4, 1913, after an illness of three years.

The second case was that of a woman, a resident of McLeod County. Death occurred at the University Hospital, Minneapolis.

The third patient was a woman, aged 45. Residence and place of death was Minneapolis. Duration of illness was two years. She died April 21, 1914.

The fourth patient, a woman aged 55 residing at Rochester, died in June, 1914. This case terminated fatally in less than two years following the first symptoms.

The discovery of at least three of the reported cases in the most important medical centers in this part of the Northwest is significant: It is a matter of common observation that the best diagnosticians live in the cities and larger towns, and their opportunity for knowing the possible extent of pellagra in the rural districts is limited. Certainly the reported cases are not a true index to the number actually existing in the commonwealth. How many pellagrins the physicians

PELLAGRA IN MINNESOTA

DEANE R. BRENGLE, M.D.

ST. PAUL

REPORT OF CASE

Up to the present time four cases of pellagra have been reported to the Minnesota State Board of Health, a man and three women.

The first case was that of a man aged 53, a resident of Olmstead County. His former residence was

of the smaller towns have overlooked, we can only surmise. Especially is a mistake apt to occur in that type of the disease lacking definite cutaneous manifestations, designated by Roussel as pellagra sine pellagra. Such a case has recently been reported by Frazer¹ of Asheville, N. C. Following is a report of a case which recently came under observation in St. Paul:

History.—W. Y., man, aged 35, Cuban, laborer, entered the St. Paul City and County Hospital, June 17, 1914. He sought admission because of a dermatitis of the face and hands which was accompanied by an intense itching and burning. He also complained of headache of several weeks' duration, pain in the back and shoulders, and vague digestive disturbances. He was despondent to a degree that had assumed suicidal tendencies. General malaise was marked. The skin symptoms had existed for three weeks previous to admission—the headache and gastro-intestinal symptoms for a somewhat longer period.



Patient with pellagra.

I was on contagious service at the time and was called on to admit the case as one of a possible erysipelas. At once I was impressed by the characteristic symmetry of the skin lesions and strongly suspected the probability of their pellagrous nature.

The patient gives the following history: He is a native of Cuba, but has resided in the United States since the age of 4 years. He has traveled extensively; worked in many states of the Union, but has been very little in the extreme southern sections of the country. Much of his time has been spent in railroad and construction camps. He recalls distinctly having seen at least one case similar to his own, among his fellow laborers. He states that for several years he has eaten excessively of cornbread and that the meal often became moldy from being kept in the damp store-car. This statement was unsolicited and is mentioned without regard to its possible bearing on etiology, which is not within the

province of this article. His habits have not differed materially from those of his associates. He smokes excessively, uses alcohol immoderately, and is addicted to periodic venery. He denies luetic infection. With the exception of chancroid, a possible lead poisoning ten years ago, and one attack similar to his present malady, coming on at the same time last year, he has never been sick.

Such family history as he can give is without significance: Father died of "a fever." Mother of pneumonia. Beyond these simple facts he is uninformed.

Physical Examination.—Adult male, fairly well nourished; height 6 feet 1 inch; weight 165 pounds. The face and neck, dorsal surface of the hands and upper one-third of forearms are covered with a diffuse dermatitis in which coin- and wreath-shaped figures are prominent. The distribution is characteristic and pathognomonic. On the hands only the dorsi are affected, and the extent on the wrists corresponds to the weather-tanned areas. The line of demarcation is definite and pronounced, giving the hand a glove-like appearance. The lesions are most marked and extend farther around on the radial than on the ulnar side. The terminal phalanges are uninvolved, as are also the contiguous portions of the digits. The elbows are slightly but distinctly involved. The entire affected surface presents a uniformly deep red, or reddish purple color, on which the mottlings stand out prominently. The skin is thick and hypertrophic—tense and hard to touch.

On the face the erythema is of a deeper hue and there is some edema which has increased since admission. There is evidence of extensive epidermal exfoliation, the scales being much larger than those on the hands. Pustulation almost approaching furunculosis has occurred on the forehead and cheeks, accentuated undoubtedly by a preexisting acne. The ears are markedly excoriated and fissured. On the face, as on the hands, the eruption is definitely confined to the sun-exposed areas; anteriorly a narrow zone of healthy skin separates the dermatitis from the hair line.

Eyes: There is a ptosis of left lid and a bilateral drooping of the superciliary folds. The right pupil is dilated. Pupils react to light and accommodation.

Chest and Abdomen: Lung boundaries are normal. Both lungs are emphysematous. There are no areas of dullness.

Cardiac dullness is increased from side to side. Apex beat is not palpable. Pulse was 65 on admission; it continued unchanged for the first week, and then increased to 70.

Area of splenic dullness is decreased.

Superficial glandular enlargement is limited to the epitrochlears, which are enlarged to such an extent as to be plainly visible on inspection. I have never seen this finding referred to in the literature and would be glad to know if any one has made similar observation.

Gastro-Intestinal: Anorexia is a prominent symptom. Constipation predominates but alternates with diarrhea. There is some pyrosis and flatulence. There are no ventral or dorsal foci of tenderness over region of the stomach.

Nervous System: Static sense is markedly impaired (positive Rombergism). The deep reflexes are greatly exaggerated. Cutaneous sensibility over inguinal region and extensor surface of thighs is decreased. There are no areas of anesthesia or hyperesthesia. There is no Babinski or Oppenheim. Over the upper dorsal vertebrae there are marked pain and tenderness. Headache is at times intense and is accompanied by great lassitude and mental depression, almost amounting to a phobia.

Patient is well orientated and intellect seems unimpaired, but he is apathetic and shows marked mental abstraction. The simplest questions are answered with apparent effort and only after prolonged hesitation.

Laboratory Findings.—The laboratory examination conducted by Dr. M. Barron, Pathologist of the Medical Department of the University of Minnesota is as follows:

Blood: Hemoglobins, 0.75; erythrocytes, 4,700,000; leukocytes, 7,200. Differential: Polymorphonuclears, 61 per cent.; lymphocytes, 26; large mononuclears, 8; transitionals, 3;

1. Frazer, Thompson: Report of a Case of Pellagra with Late Skin Lesions. THE JOURNAL A. M. A., June 20, 1914, p. 1964.

eosinophils and basophils, 1 per cent. of each. Two Wassermanns taken one week apart were negative.

Urinalysis: Examination was made particularly for indican, and the reaction (Obermayer's method) showed it to be present in great quantity. There were no albumin or casts, and no sugar.

Unfortunately gastric analysis was not done until the disease had begun to improve under treatment. Ewald's test meal was given and removed in an hour. The quantity was about 25 c.c. Free hydrochloric acid 26. Total acidity 61. Occult blood ++. No lactic acid was present. No tests for ferments was made.

Subsequent History.—The case has attracted a great deal of attention and has been seen and examined by many physicians of St. Paul and Minneapolis and by other medical men, prominent in the Northwest. At no time has the diagnosis been seriously questioned. The triad of cutaneous, gastrointestinal and nervous symptoms are plainly evident, even on cursory examination.

The patient has now been in the hospital and under constant observation for a period of over seven weeks. During this time he has received a nourishing diet, and all forms of exertion have been interdicted. Medicinally he has received Fowler's solution, beginning with 5 drops, and increasing to 20, three times a day. In his general condition marked improvement has occurred. The skin symptoms have ameliorated; in fact, the facial eruption has almost entirely disappeared, leaving a surface of peculiar dark-red color. His mental state has also improved. At first he paid little heed to his surroundings unless solicited to do so, and was inclined to resent attention of any sort. He has now become more communicative and cheerful, takes an interest in all proceedings affecting him and is an exceedingly well-behaved person. His present attitude is one of distinct euphoria, and he is subject to outbursts of senseless laughter. He still complains of insomnia, but his former intense cephalalgia has receded. At first scarcely able to move about, he now assists in the general work around the ward. Certainly all has been accomplished that could be expected of any line of treatment in so short a time.

City and County Hospital.

PEMPHIGOID OF THE NEW-BORN (PEMPHIGUS NEONATORUM)

WITH REPORT OF AN EPIDEMIC *

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Pemphigus neonatorum, or, as Jadassohn¹ more aptly terms it, "pemphigoid of the new-born" or "infantile pemphigoid," was first described as an independent disease in 1773 by Ochene.² Previous to this time it had been confounded with syphilis, and even up to the end of the last century there were many who considered it syphilitic in origin.

A number of epidemics of this disease have been reported by different men, for example, Rigby³ in 1834 described several mothers in a London obstetric house who were affected from their infants, and he himself contracted the disease while performing a

necropsy on one of the infants. Brocq² thinks that in 1850 Lasegue and Trousseau⁴ without a doubt described an epidemic of this disease from the Necker Hospital under the name of "Varicelle Pemphigoid." Following this, epidemics were reported by Hervieux, Olshausen and Mekus, Klemm, Koch and others.² Moldenhauer in 1874⁵ reported an epidemic of ninety-four cases from the Leipsic clinic, and E. Vidal⁶ the following year studied about fifty cases at the clinic of Saint Louis Hospital.

After all these careful observations no more doubt was held as to the contagious and epidemic character of the disease, and the later reports and researches have only tended to clear up some of the mooted questions as well as to prove or disprove the relationship of the disease to some of the allied affections. Since 1875 the question has been studied quite thoroughly by many men; a number of epidemics have been reported; but as these have been very carefully reviewed by several others we would refer those interested to the able articles with bibliographies of Brocq,² Carlton,⁷ Foerster,⁸ Della Favera⁹ and others that will be mentioned later. Nevertheless, in spite of the seemingly simple character of the clinical picture, to use the words of Hofmann,¹⁰ "there are still some points about the disease as yet not satisfactorily settled," for example, its etiologic agent, its relation to *impetigo contagiosa seu vulgaris*, and to Ritter von Rittershain's *dermatitis exfoliativa neonatorum*.

During the past year we had the opportunity of studying an epidemic of this disease in Maternity Hospital. The case histories will be given here in brief,† after which we will discuss the problems which they present.

REPORT OF CASES

CASE 1.—Baby B., aged 11 days, with negative family history was seen April 27, 1913. Child was delivered with instruments and six days after birth had a few vesicles, which appeared first on the face. They kept increasing in size and number, breaking shortly after being formed. Baby had no rise of temperature and had been increasing daily in weight. As there seemed to be no improvement one of us was called in consultation.

As examination showed nothing abnormal internally the skin condition will be described.

Around the mouth, in the right axillary space and around the buttocks there were found numerous large and small vesicles, varying in size from a split pea to a half-dollar or a little larger. In places they had coalesced and broken and a very little serum ran out leaving a reddened derma with a slight bleeding on the floor of the lesions. With the exception of a slight vesicle on the right palm, both palms and soles of feet were free from lesions.

Gelatin baths and emollients were ordered for the baby but two days later he was worse, a large part of the face and buttocks being involved. Cultures were made from several intact vesicles on agar-agar, three tubes being used to each culture, made with a sharply pointed platinum needle which was inserted as carefully as possible into the base of an intact vesicle and then three smears made on each of the tubes in succession. Locally, ammoniated mercury ointment was ordered.

4. Lasegue and Trousseau: *Gaz. méd. de Paris*, 1850, 478. Quoted by Brocq.

5. Moldenhauer: *Arch. f. Gynak.*, 1874, vi, 369.

6. Roeser: *Du pemphigus chez les nouveau-nés. Thèse de Paris*, 1876.

7. Carlton, E. P.: *New York Med. Jour.*, 1907, lxxxvi, 573.

8. Foerster, O. H.: *Pemphigus Neonatorum, or Bullous Impetigo*

Contagiosa of the New-Born, *JOURNAL A. M. A.*, July 31, 1909, p. 358.

9. Della Favera: *Arch. f. Dermat. u. Syph.*, 1909, xcvi, 231.

10. Hofmann, L.: *Arch. f. Dermat. u. Syph.*, 1913, cxviii, 245.

11. Ritter von Rittershain: *Centr.-ztg. f. Kinderh.*, October, 1878.
† Case histories and histologic studies will be described more in detail in the reprints.

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† Read before the Section on Dermatology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Jadassohn, J.: *Ueber Pyodermien, die Infektionen der Haut mit den Banalen Eiterregern*, Halle, a. S., Carl Marhold, 1912.

2. Brocq: *La pratique dermatologique*, Paris, Masson et Cie, 1902, iii, 829. Quotes Ochene, Hervieux et al.

3. Rigby: *London Med. Gaz.*, 1833, xvii, 125.

Forty-eight hours later a spot on the forehead inoculated from one of the intact vesicles showed a small vesicle while all cultures taken showed a pure staphylococcus growth. As the child grew steadily worse an autogenous vaccine was prepared.

May 3, 1913: Child much worse. The entire epidermis is more or less scaly and red. The vesicle formation has spread over the entire face and down over the chest and into the axillary spaces, and over the groins and buttocks, while the epidermis of the hands and feet is raised like

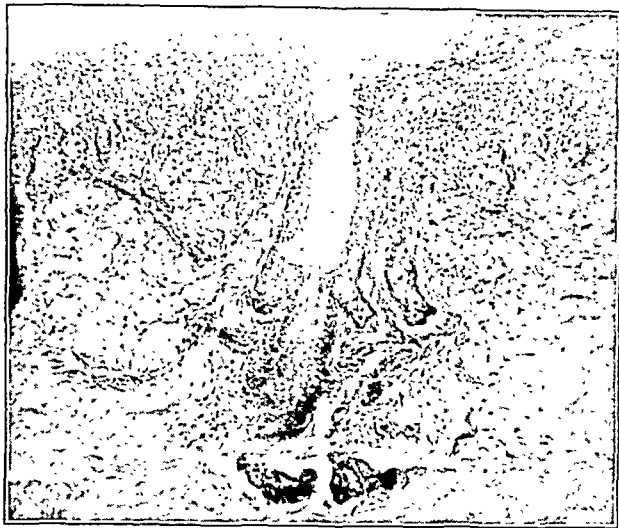


Fig. 1.—Extreme loss of epidermis with a few epidermal cells imperfectly attached on the right. The necrotic process has extended down into the hair follicles and even into the sebaceous glands. Marked cellular infiltration and edema. Losin and hematoxylin stain.

gloves. The skin peels off in large strips, leaving a moistened, slightly bleeding derma. The child's temperature is high and he is taking practically no nourishment and is very restless. As the autogenous vaccine was not ready the patient was given 5,000,000 of a stock staphylococcus vaccine.

May 4, 1913: Babe died during the night.

Necropsy Findings.—At necropsy the skin changes were much the same as already described but almost universal in extent. No true ulcerations were noted. No gross pathologic changes of the internal organs were noted. On microscopic examination the cells of the heart, liver and kidneys all showed an extreme grade of cloudy swelling while the liver and kidneys were markedly congested. Moreover, in the veins of the liver and lungs numerous emboli, made up of agglutinated cocci were found by the Gram-Weigert stain.

Skin: In many areas the epidermis is lost and when present consists of only a few layers of cells. There is an imperfect cornification, even the uppermost layers of cells still retaining their nuclei; while there is no stratum lucidum or granulosum. Above the epidermis, or rather its remnants, there is generally found a thick crust made up of fibrin, broken-down cells, and large clumps of cocci as shown in Figure 4. The epidermis is very edematous and infiltrated with numerous polymorphonuclear leukocytes and erythrocytes. In many places however, it is entirely lost, as shown in Figure 1, and there is a denuded necrotic derma markedly infiltrated with serum, erythrocytes, leukocytes and cocci. This process is especially marked along the course of the hair follicles (Fig. 1) where in some instances it was possible to find inflammatory and necrotic changes with bacterial invasion down to the root of the hair. The deeper vessels are all much engorged and surrounded by leukocytic infiltration, while the edematous tissues of the corium, as is usual in such cases, take the stain rather poorly.

CASE 2.—Baby M., seen May 12, 1913, was first noted on the eighth day after birth as having a small vesicle on the face. Later several more formed and a large pustule started below the right eye. The child was given 0.2 c.c. (about 5,000,000) of the autogenous vaccine prepared for Patient 1. There were no intact vesicles from which to make cultures. The

baby showed immediate improvement and three days later was given a second injection and two days later a third, and was discharged May 20.

CASE 3.—Baby M., aged 7 days, seen May 20, 1914, first developed a vesicle near the right corner of the mouth and later several started on the chest and in the axillae and groins. Babe was well otherwise and gained regularly. It was given some of the vaccine prepared for Patient 1, dose being repeated twice and the baby was discharged May 24. Cultures in this case by Lewandowsky's method showed a pure *Staphylococcus aureus*.

CASE 4.—Baby B., aged 12 days, was seen May 14, 1914. Three days before a small vesicle started at the right side of the neck which tended to spread and one of us was called in. At the time of the examination several spots of folliculitis were noted around the eyes, the infection having apparently involved the follicles of the eyelashes. On the neck and lower left chin there were several vesicles, one or two of which had already ruptured. Along the right side there was a long irregular-shaped lesion (8 by 5 cm.) showing a large broken bulla with wrinkled epidermis and a moist reddened floor. The armpits were also involved, while the left hand showed complete loss of the epidermis from the wrist down, leaving a moist red uncovered derma showing here and there slight bleeding puncta. The baby had no elevation of temperature and seemed well and was gaining regularly in weight. Cultures were taken from several intact vesicles. In this case likewise, the vaccine was used and the improvement was remarkable after one injection, while after two more the baby was practically well.

CASE 5.—Baby H., aged about 5 days, seen May 14, 1913, had several vesicles on the neck, and the skin around a fresh circumcision wound on the penis was markedly involved, likewise the axillae. Cultures made by Lewandowsky's method showed pure *Staphylococcus aureus*. In this case all the lesions but the one on the penis healed readily after use of the vaccine but the open wound healed rather slowly.

CASE 6.—Baby E., aged 6 days, had merely a few vesicles on the side of the face and neck which reacted immediately to the vaccine.

CASES 7 and 8.—These two infants, not seen by us, had only one or two vesicles and were immediately removed to

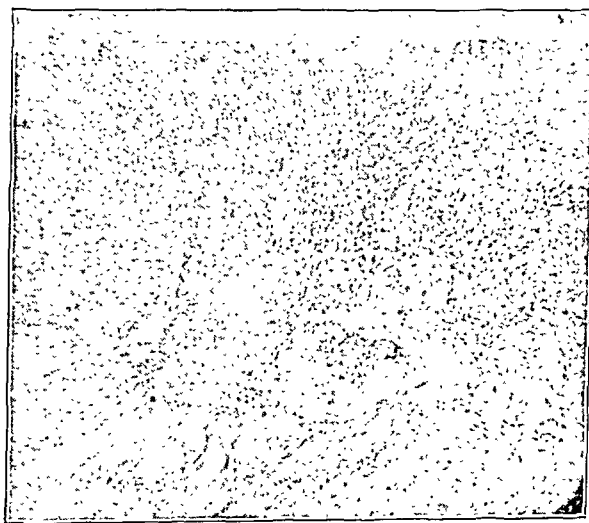


Fig. 2.—Marked exfoliation of epidermis with intense cellular infiltration. Thick crust over the epidermis made up of necrotic cells and clumps of bacteria. Van Gieson's stain (Weigert's modification).

their homes and tincture of iodine applied locally with good results (questionable).

CASE 9.—In addition, another child, aged 3 weeks developed a crusted lesion on the cheek after leaving the hospital. This did not react to ammoniated mercury, but cleared up quickly after use of the vaccine.

SUMMARY OF EPIDEMIC

In a series of eight or possibly nine cases of infantile pemphigoid the *Staphylococcus aureus* was cultivated

in pure culture in all cases in which unbroken vesicles could be found. In the first case a bacteriemia developed, resulting in death on the twelfth day of the disease. In the other cases the use of an autogenous vaccine seemed to give prompt results when other measures failed. The infections were apparently carried from one to another and despite strict isolation precautions and fumigation of separate rooms, the epidemic became so extensive that it was necessary to



Fig. 3.—Process much like that in Figure 2 but with a higher magnification. Marked dilatation of the vessels. Clumps of bacteria in the crust covering the exfoliating epidermis. Eosin and hematoxylin stain.

close the institution for a thorough disinfection. Only after the disinfection of the entire institution did no new cases develop.

Pemphigoid is a disease found all over the world, cases having been reported from Asia, Japan, Europe, North and South America. Season apparently has little effect on its prevalence. The sexes are about equally affected. It generally appears from about the fourth to ninth day after birth and is, through contagion, comparatively often seen up to the age of 3. After the age of 6 the skin is not so susceptible, though it is occasionally seen in adults who contract it from the infants or children, for example, nurses contract it on their fingers, mothers on their mammar, etc. The disease in its epidemic form attacks the strong, normal infants as well as the weaklings.

There has been much discussion concerning the etiologic agent in the disease. Kaposi believed that it was simply an increased physiologic exfoliation taking place after birth, and others of the older writers mentioned mycoses, while Vargas¹² in his cases thought that toxins were to blame. The following authors found the staphylococcus in the skin lesions in a number of cases: Lewandowsky,¹³ Engman,¹⁴ Call,¹⁵ MacGuire,¹⁶ Schwartz¹⁷ and Köhler.¹⁸ Della Favera and Hofman not only found the staphylococcus in the vesicles, but also in the blood. Almquist¹⁹ in 1890 studied an epidemic in the Maternity Hospital in Gottenborg. Despite all attempts at disinfection and isolation the epidemic lasted six months, and 134 of

the 216 children were attacked and four died. Several of the mothers were also affected with lesions on the breasts. He regularly isolated an organism much like a *Staphylococcus aureus* with which he inoculated himself and produced vesicles. He considered, however, that the organism, on account of cultural characteristics, should be differentiated from the staphylococcus. Clegg and Wherry²⁰ have isolated a diplococcus much like Almquist's organism, which they term *Micrococcus pemphigi contagiosi*. They state that it was found by them in all of the five cases investigated at the Manila, P. I., Civil Hospital. Moreover, they state that practically every child in this hospital has pemphigus neonatorum. Manson²¹ has also found a diplococcus, while Holt²² in one case found the staphylococcus, streptococcus and *Bacillus lactis aerogenes* at necropsy. Foerster asserts that there is no one causative organism, while Bloch²³ in a carefully studied series of fifteen cases from Baginsky's clinic found in the eight coming to necropsy pure cultures of the streptococcus in the blood and the staphylococcus in the skin lesions. He thought that in all of them there was a mixed infection and that the streptococci worked the deleterious influence. The majority of the writers, however, feel that the staphylococcus bears an etiologic relationship to the disease. We shall discuss the variability in the findings more fully at a later point in this paper. As in our case, it is often a difficult matter to find the source of contagion. In one of Hofmann's cases it was from a case of impetigo Bockhart, a disease known to be due to the staphylococcus. In one case reported there was an infected vaginal tear. The midwife has frequently been the guilty carrier of the disease from one case to another; thus Corlett's²⁴ two cases occurred in the practice of one midwife. Maguire's¹⁶ eighteen cases with one exception, and Jukovsky's²⁵ twelve cases

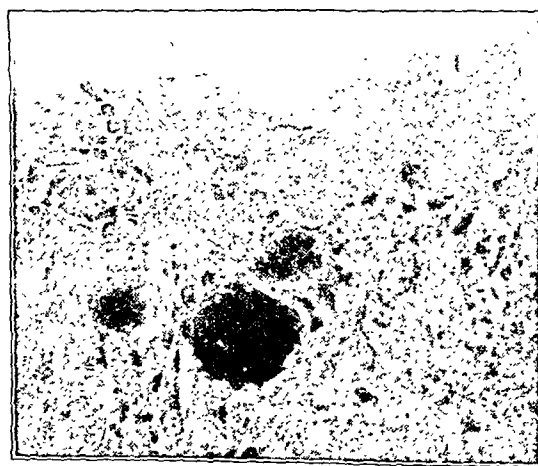


Fig. 4.—Epidermis showing edema and cellular infiltration with large dark masses of agglutinated cocci. Eosin and hematoxylin stain.

could likewise be traced to one midwife. Nurses, on account of carelessness in technic, have also been reported as carrying the disease from one child to another. Thus in Bumm's clinic at the Berlin Charité

12. Vargas, A. N.: Festschr. for Abraham Jacobi, New York, 1890, p. 363.

13. Lewandowsky, F.: Arch. f. Dermat. u. Syph., 1909, xciv, 163.

14. Engman, M. F.: Jour. Cutan. Dis., 1901, xix, 180.

15. Call, Emma L.: Am. Jour. Obst., 1904, i, 473.

16. MacGuire: Brit. Jour. Derm., 1903, xv, 427.

17. Schwartz, H. J.: Bull. Lying-in-Hosp., New York, 1908, v, 1.

18. Köhler, F.: Deutsch. Arch. f. klin. Med., 1899, lxii, 579.

19. Almquist, E.: Ztschr. f. Hyg. u. Infektionskrankh., 1891, x, 253.

20. Clegg and Wherry: Jour. Infect. Dis., 1906, iii, 165.

21. Manson, P.: Tropical Diseases, London, Cassell and Company, 1900, p. 611.

22. Holt, L. E.: New York Med. Jour., 1898, lxxvii, 175.

23. Bloch, W.: Arch. f. Kinderh., 1900, xxviii, 61.

24. Corlett, W. T.: Am. Jour. Med. Sc., 1894, n. s., cvii, 413.

25. Jukovsky: Trudi Obsh. S. Peterb. dietsk. vrach., 1901, vi, 31.

there were nine cases in which it was possible to trace the disease from the first child by means of a nurse to other nurses and to the children. Zechmeister²⁶ in eleven months saw twenty-eight out of seventy-six children infected, that is, 37 per cent. Nearly all of these cases were due to one midwife, while the others had no trouble. Some older children who came into contact with the patients were also infected. Brosin²⁷ reports two such epidemics traceable to midwives in which there were eighteen cases in sixty-four confinements. When an epidemic is once started, it is often exceedingly difficult to trace the starting-point of new cases, for even in such well-organized clinics as the Charité it was finally necessary to empty the rooms and disinfect them one by one. Such was also the case in the epidemic here reported and also in Almquist's and Call's epidemics. In the latter, 27 per cent. of the infants were infected despite the strictest isolation precautions. Probably the infection takes place through any open lesion on the skin, even the slightest scratch. Many of them no doubt take place through the intact mucous membranes; hence the tendency for the lesions to appear first around the mouth. It is noteworthy that in all of Maguire's fatal cases the umbilicus became infected, secondary to the skin infections, and it is quite probable that this is one of the main avenues by which the bacteriemia develops.

The necropsy findings in fatal cases are those of any infection or bacteriemia: parenchymatous degeneration of the liver, kidneys, pancreas and heart; inflammatory changes in the gastro-intestinal tract varying from a simple catarrhal and follicular inflammation to true ulcerative processes. In the cases in which a bacteriemia exists, bacterial and agglutinative *thrombi* are frequently found. Throughout the tissues in such cases, by proper staining methods, clumps of organisms can be found. There is some difference of opinion as to the histologic changes produced in the skin. It is sufficient to state here that the most characteristic changes are dilatation of the papillary vessels with edema and cellular infiltration, followed later by an edema of the epidermis and vesicle formation. In a progressive lesion the deeper vessels become involved, with extensive edema of the deeper tissues. The changes in the epidermis are dependent on the underlying tissues, and the desquamation is in proportion to the intensity of the exudation and of the infection.

Experimentally, several workers have been successful in producing the lesions by inoculations. Almquist inoculated himself with the coccus, which he isolated from his epidemic in Gottenborg, and there was produced vesicle formation, but no general infection. Landsteiner, Levaditi and Prasek²⁸ isolated a coccus from an infant dying with infantile pemphigoid and for several generations inoculated it into chimpanzees (five with pemphigoid lesions). They found that the virus was not filtrable. They also inoculated themselves and succeeded in producing vesicle formation, but they were not reinoculable or autoinoculable. Their histologic findings were similar to those mentioned above.

The symptoms of pemphigoid are quite typical though atypical cases are often seen as in our epidemic. The skin at birth shows nothing abnormal, but between

the fourth and ninth day there suddenly appears, after perhaps a slight preliminary redness, an acute outbreak of vesicles varying from 1 mm. to 2 cm. or even larger in diameter. The vesicles usually appear first around the oral cavity and generally spread with considerable rapidity to other portions of the body. Neighboring vesicles may coalesce and form lesions from 5 to 6 cm. in diameter, resulting in extensive exfoliation of the epidermis and leaving the moist red cutis beneath it. As a rule, the vesicles break early, and it is stated by Brocq that they do not involve the palms or soles, though in our first and fourth case both were markedly involved. There is said to be no elevation in temperature unless a secondary infection intervenes; while not uncommonly the infant will gain weight during the illness. As a rule in a case terminating favorably after two or three recurrences the disease disappears, the usual duration being one or two weeks. In the fatal cases the vesiculation and desquamation may become so marked that practically the entire surface of the body is involved. In such cases digestive disturbances are very severe; bacteriemia develops and extensive changes in the parenchymatous organs occur.

The typical case is quite characteristic and the diagnosis is comparatively easy; in atypical cases, however, considerable difficulty is encountered. In the differential diagnosis, congenital syphilis is probably the first disease that must be ruled out. Impetigo contagiosa seu vulgaris seu bullosa is another that may cause considerable trouble; in fact, some authors believe the diseases to be identical. Dermatitis exfoliativa neonatorum in its early stages is said to be very similar; we will mention our views on this subject later. Pemphigoid eruptions of medicinal origin, bullous-varicella of the new-born, a case of which in an infant at the age of eight days one of us has seen, and Dühring's disease (dermatitis herpetiformis Dühring) must always be in mind. Brocq states that bullous urticaria is more frequent in infants than in older children. Epidermolysis bullosa, a rare hereditary disease, must also be remembered. Köhler¹⁸ has written a lengthy article on "febris bullosa," a disease characterized by short prodromata and fever followed by the appearance of vesicles on an intact skin. It is markedly contagious, affecting both adults and infants. There is some question whether this affection is a separate disease or only an atypical pemphigoid developing under favorable circumstances.

In congenital syphilis showing bullous lesions differential diagnosis may be quite difficult. The marked involvement of hands, feet and buttocks, however, together with the occurrence of snuffles, an enlarged liver and spleen and positive Wassermann reaction should be sufficient to simplify the matter.

There are still many workers who believe in the identity of impetigo contagiosa and pemphigus neonatorum despite the fact that such careful workers as Sabouraud,²⁹ Lewandowsky, Jadassohn and others have shown conclusively that the ordinary impetigo contagiosa is due to the streptococcus, and that Cole³⁰ has further shown that it is due to the *Streptococcus longus seu haemolyticus* in particular, while this organism has not been shown to be the etiologic factor in pemphigoid. Matzenaur³¹ in particular may be

26. Zechmeister: München. med. Wchnschr., 1887, xxxiv, 737.

27. Brosin: Ztschr. f. Geburtsh. u. Gynak., 1899, xl, 418.

28. Landsteiner, K.; Levaditi, C., and Prasek, E.: Compt. rend., Soc. de biol., Paris, 1911, lxx, 643, and 1026.

29. Sabouraud, R.: Ann. de dermat. et de syph., 1900, Series 3, i, 62, 220, 426.

30. Cole, H. N.: Arch. f. Dermat. u. Syph., 1913, cxvi, Heft 1, 207.

31. Matzenaur, R.: Wien. klin. Wchnschr., 1900, xliii, 1077.

mentioned as one holding to the identity of the diseases. He may have changed his views since 1901, but at that time he cited the case of a woman with impetigo contagiosa circinata of universal extent, from which her babe, three days old, contracted a disease on those parts which came into contact with her. Of the physicians who saw the child, all were forced to make a diagnosis of pemphigus neonatorum, though in the course of a week the disease took on the characteristics of the circinata form of impetigo contagiosa. Engman,³² as late as 1901, still believed in their identity. He was able at that time to isolate in seven cases of bullous impetigo the staphylococcus in six and a streptococcus in one case. Sabouraud³³ has shown that the streptococcus is a facultative aerobe and grows better in a liquid than in a solid medium. In order to obtain the true organism in such cases as Engman's, Sabouraud's pipette bouillon method or Lewandowsky's successive stroke-culture method must be used. In all likelihood if such a technic had been used the streptococcus might have been obtained in the first six cases. Not a few authors, however, agree with Engman and Matzenaur. Thus Bunch³⁴ says that pemphigus neonatorum, when transmitted to adults, always results in a typical impetigo contagiosa while the same contagium, transmitted to infants, causes pemphigus neonatorum. Faber³⁵ claims to have seen a specific instance of the above occurrence and states that many times crust formation is found in infants with pemphigus neonatorum. To strengthen his contention he quoted Moldenhauer in his report of the epidemic of 1872-1873 in the Leipsic clinic: "the numerous vesicles dried into a rather thick scab" (*das manche Blasen zu einem recht dicken Schorf vertrockneten*). Marsh³⁶ in 1910, says, "That pemphigus neonatorum and bullous impetigo contagiosa of the new-born are identical, is now practically proven." He describes three cases of pemphigus neonatorum in which two attending nurses developed typical impetigo. Luithlen³⁷ in 1899 reviewed the histologic picture of the two diseases and found them to be practically identical. Foerster in 1909 says, "Although many instances of an association of pemphigus neonatorum and impetigo contagiosa have been recorded, the possible identity of the two affections has not been given sufficient prominence in English dermatological literature." The main evidence as to their identity has come from their clinical resemblance in certain cases and in certain epidemiologic studies. Careful bacteriologic studies by numerous authors, however, have quite uniformly shown that in pemphigus neonatorum the staphylococcus is the etiologic agent, while in impetigo vulgaris seu contagiosa seu bullosa, the streptococcus is the organism causing the disease. It is quite probable that some cases diagnosed as pemphigus neonatorum are really bullous impetigo, as in a case of Whitfield's,³⁸ in which pure cultures of streptococci were recovered from the mother and infant, the baby having a bullous eruption and the mother an impetigo contagiosa of the forehead. There is one rare type of impetigo, however, from which we must admit that infantile pemphigoid can without question be contracted. We refer to impetigo Bockart staphylogenes, a disease characterized by isolated, discrete,

thin varnish-like crusts limited to the follicles, that leave a pigmented area in healing, rather than redness as in impetigo contagiosa. In Hofmann's case, numerous bacteriologic examinations of both the mother and child gave only the staphylococcus, and he believes that the first case described by Winternitz³⁷ was a case of pemphigus neonatorum which probably was contracted from such a type of impetigo. We must also recognize the fact that several epidemics of a staphylococcus "impetigo" have been noted in Japan by Dohi and Dohi³⁸ in which the *Staphylococcus albus* was always cultivated. This was an epidemic and sporadic skin disease of children characterized by serous or seropurulent vesicles and bullae "that built no waxy yellow thick crusts, and left rather fine white or light yellow transparent lamellae or crusts." This type of "impetigo" has been reported in Europe and must be remembered as a possible explanation in the cases of pemphigus said to have been contracted from impetigo. As mentioned by Jadassohn, we must not forget, too, the possibility that it may be the secondarily infecting staphylococci in impetigo which cause the pemphigus neonatorum, while the streptococcus may not be so capable of infecting the infant's skin as the former organism. Only very careful observations and extensive cultural examinations will enable us strictly to rule out the possible existence of a pemphigus neonatorum due to the streptococcus. As the problem now stands, however, and in the present state of our knowledge, we must assert our belief to be that the large majority of the cases of infantile pemphigoid are due to the staphylococcus and are to be differentiated from impetigo vulgaris contagiosa.

The question of the differentiation of pemphigus neonatorum and dermatitis exfoliativa neonatorum (Ritter) now arises. We would refer any one interested in the historical side of this disease to the able article by Carlton.⁷ In the year 1878 Ritter von Rittershain described 297 cases of this peculiar skin disease affecting new-born babies. It had undoubtedly been observed previously, but he was the first author to describe it accurately and to recognize its clinical significance. The disease begins during the first or second and up to the fifth week of life. It is characterized by a not sharply defined redness which is at first most marked around the mouth and spreads rapidly over the entire body or portions of it. With this there is an increased turgescence of the skin and the connections between the rete malpighii and horny layer become loosened so that, at times, spontaneously or with slight trauma, the latter can be removed in large plaques as in pemphigus foliaceus, leaving a dark-red moist or dry bed beneath it. The horny layer of the hands and feet may sometimes be removed as a glove, as in our case, and according to the intensity of the disease vesicles, bullae and cracks in the true skin may occur. Following the breaking of the vesicles or bullae crust may form. The entire process usually lasts a week or ten days and is fatal in 50 per cent. of the cases. As in pemphigus neonatorum the patient may have no elevation in temperature and may make the normal gain in weight during the duration of the disease. The complications and histologic findings are similar to those in infantile pemphigoid. Luithlen finds a marked proliferation of the rete malpighii in its lower layers with a lack of cornifica-

32. Bunch, J. L.: Brit. Med. Jour., 1908, ii, 1260.

33. Faber: Monatsh. f. prakt. Dermat., 1890, x, 253.

34. Marsh, A. D.: Yale Med. Jour., 1910, xvii, 90.

35. Luithlen, F.: Wien. klin. Wchnschr., 1899, xii, 69.

36. Whitfield, A.: Brit. Jour. Dermat., 1903, xv, 218.

37. Winternitz, R.: Arch. f. Dermat. u. syph., 1898, xlii, 397.

38. Dohi, K., and Dohi, S.: Arch. f. Dermat. u. syph., 1912, cxi, 629.

tion and casting off of the upper layers. He believes that the disease begins with a hyperemia and exudation in the papillary and subpapillary layers and as an expression of this there is a hyperemia of the skin with consequent disturbances in the normal nutrition of the epidermis leading to a proliferation of the rete malpighii which causes the scaling. Winternitz found much the same histologic picture and was able to cultivate the staphylococcus from the blood. Della Favera's findings agree with the preceding, but he believes that the epidermal changes are dependent on lesions lower down in the corium. He also found the staphylococcus in the blood. From his studies, he believes that the lesions in pemphigus neonatorum are more localized in the papillary body and that the changes were more striking in the epidermis. He admits that it is sometimes difficult to distinguish between the two diseases, but he was unable to find in the literature any mention of a case of pemphigus neonatorum starting from a dermatitis exfoliativa neonatorum (Ritter). Other authors do not agree with Della Favera in this latter critical statement. For example, our own epidemic started with an infantile pemphigoid and later changed into a typical clinical case of dermatitis exfoliativa neonatorum. In Hofmann's case the disease began on the fourth day with a typical Ritter's disease, which on the seventeenth day changed to an ordinary pemphigoid with staphylococcemia and death on the twenty-ninth day. The mother had a few impetigenous lesions of the staphylococcic type which were the source of the infection. Bloch, from his experience in the epidemic from Baginsky's clinic, says he can see no reason why the two diseases should be differentiated, for, in nearly all his cases, at least two-thirds of the skin could be stripped off as in a burn. Thus we are able to cite cases changing from Ritter's disease into pemphigus neonatorum and vice versa. Epidemics result from both diseases of varying severity, the histologic findings are similar and the etiologic agent is the same, and therefore we feel with Richter that "dermatitis exfoliativa needs no other classification than as a variety of pemphigus neonatorum, characterized by an especially ready exfoliation of the epidermis with malignity."³⁹ We share this opinion along with such men as Jadassohn, Hedinger, Baginsky and others. Undoubtedly the condition of the skin, state of maceration, age of the infant and severity and extent of the infection have a large influence on the character of the lesions found, and this may, and probably does explain in a large part their variability. There is no reason why there should be a differentiation between the two affections. It would seem that Ritter's disease is only a malignant type of infantile pemphigoid.

The prophylaxis of infantile pemphigoid is extremely important. Because of the marked contagiousness and high mortality, we believe that laws should be enacted placing this disease among the reportable and quarantinable diseases. Impetigo contagiosa is, in many states, a reportable disease, but we find no mention of pemphigoid seu pemphigus neonatorum. We feel that this is very important and might be the means of saving many lives in the future. Once the disease is started in a babies' or maternity hospital, only the most stringent quarantine will stop its ravages. Removal

of both mother and infant to a contagious disease hospital in which the technic of aseptic nursing is well understood and carried out, would no doubt save lives, trouble and expense.

In view of the excellent results in our cases we would recommend the use of autogenous vaccine in all cases,⁴⁰ though when a bacteriemia has already developed it would be of quite doubtful value. Locally, astringents and drying powders appear to give the best results, while ointments in our experience were worse than useless, serving only to help spread the disease. Tincture of iodine, 1 to 3, in water may be of some service on single lesions.

SUMMARY

1. In an epidemic of nine cases of "infantile pemphigoid" (pemphigus neonatorum) it was possible to isolate in pure culture the *Staphylococcus aureus* in all cases in which unbroken vesicles were to be found. In one case the termination was fatal and a coccus was found in the internal organs at necropsy.

2. The epidemic was started from a case of typical pemphigoid of the new-born, which later changed into a clinical picture of dermatitis exfoliativa neonatorum (Ritter), and as the etiologic agent in the two diseases is the same we believe there should be no distinction between them.

3. Impetigo contagiosa seu vulgaris seu bullosa (streptogenes) should be sharply differentiated from infantile pemphigoid because of its different bacteriologic origin.

4. We believe that infantile pemphigoid (pemphigus neonatorum) should be placed among the reportable diseases because of its severe epidemic characteristics and high mortality (from 25 to 50 per cent.).

5. Because of the striking results obtained in our epidemic we would recommend the use of an autogenous vaccine in all cases of infantile pemphigoid.

ABSTRACT OF DISCUSSION

DR. WILLIAM A. PUSEY, Chicago: I was much interested in the discussion of the ever-recurring question of the identity and lack of identity of these various bullous affections. I have nothing to say on the subject, however, except to protest against the use of the term pemphigoid as a noun. We already have sarcoid, a very catchy word which everyone remembers, although no one knows what it is, and we have erysipeloid, and now we have pemphigoid. Oid is an adjective terminal and to use such adjectives as nouns is bad English. Usage has already fixed it in sarcoid and erysipeloid, but bad forms should not be increased; we have to defend too many of them already.

DR. A. RAVOGLI, Cincinnati: Some years ago I published a report of a similar case under the title of dermatitis exfoliativa neonatorum (Ritter), the affection occurring in an infant whose mother had been delivered by a midwife who at the time was suffering from a kind of paronychia. A few days after birth the child became feverish and developed bullae larger than the palm of the hand over the entire body. Death occurred from exhaustion. I also object to classifying these diseases under the name of pemphigus or pemphigoid. It is quite a different disease which clearly shows an infectious nature, and it is due to the staphylo-

39. Die Dermatitis Exfoliativa braucht vielmehr nichts anders zu sein, als eine durch besondere leichte Ablösbarkeit der Epidermis und Malignität charakterisierte Untergruppe des Pemphigus Neonatorums. Richter: Dermat. Ztschr., 1901, viii, 507 and 680.

40. Since the above was written one of the authors was called to see a child 15 days old who had a typical severe pemphigoid which had persisted for 10 days. A vaccine was made from the staphylococci obtained in pure culture from several young unruptured bullae. Marked improvement was noticed three days after the first dose and on the seventh nearly all the lesions had completely healed and no new lesions had appeared. Two days after the babe was seen the mother developed vesicular and pustular lesions on the breasts from which no uncontaminated cultures could be obtained.

coccus. In the case I have referred to, large numbers of these micro-organisms were found. Nearly all the cases I have seen ended fatally.

Dr. H. N. Cole, Cleveland: The term pemphigoid was suggested because we felt that pemphigus was not a good name for this affection, and as it was somewhat similar clinically to pemphigus we adopted the name pemphigoid. As these cases are unquestionably due to the staphylococcus, there is a great field here for the use of autogenous vaccines, and I trust that others will give them a trial when such a case comes under their observation.

PENETRATING WOUNDS OF THE ABDOMEN *

RANDOLPH WINSLOW, M.D.

BALTIMORE

The subject of the treatment of penetrating wounds of the abdomen is of perennial interest. Notwithstanding the establishment of the International Court of Arbitration at the Hague, and the negotiation of arbitration treaties, wars and rumors of war are still rife. In civil life, also, strife is frequent, and deadly lesions are not infrequently inflicted. In considering penetrating wounds of the abdomen we must divide the subject into two classes: First, those occurring in civil practice, and second, those occurring during military service.

In this country, since the great Civil War, injuries of this character generally have been the result of individual frays or accidents, and are usually inflicted by missiles from pistols, rifles, shotguns and toy cannons, propelled at a moderate velocity and causing extensive lacerations of the tissues and viscera; or by stabs with knives, scissors or other sharp-pointed objects. Hospitals are usually conveniently accessible and such cases are generally promptly carried to suitable institutions, where they can receive appropriate care. Twenty years ago it was thought that the last word had been said with regard to the treatment of gunshot wounds of the abdomen, and that the rule had been firmly established to open the abdomen in all such cases, but the experience of the Spanish-American and Philippine wars cast doubt on the propriety of operative procedures in active military practice. The conflicts in various parts of the world since 1898 have still farther emphasized the impropriety of active surgical interference in this class of cases. Notwithstanding this opinion which has been rather reluctantly accepted by the profession, it was still thought that penetrating wounds of the abdomen occurring in civil life always demanded exploration. I am, therefore, surprised to find that Colonel Lagarde, in his recent book on gunshot wounds, casts a doubt on the advisability of laparotomy in civil as well as in military practice. He fortifies his position by quoting the results of both non-operative and operative treatment of penetrating gunshot wounds of the abdomen, in the great Charity Hospital of New Orleans, which appear to have less mortality when left to nature than when subjected to operation. He also expresses the opinion that the operative treatment of these injuries is followed by a higher mortality than formerly and attributes this to the fact that the pistols and revolvers now in use inflict more serious injuries than formerly. After a considerable personal experience with pene-

trating wounds, I am firmly of the opinion that all such wounds should be operated on if seen sufficiently early and if there are no urgent contra-indications to operative procedures.

In many explorations I have seen but two gunshot wounds from which I think the patients might have recovered without an operation, and but one patient not operated on primarily, in whom there were undoubtedly serious lesions, recovered, and she had an extremely stormy time and required several operations subsequently for subdiaphragmatic abscesses. She eventually recovered her health. My attention has been called to this matter again within a month by the following deplorable case, which forcibly illustrates the danger of delay in the performance of laparotomy.

REPORT OF CASE

May 25, 1914, at about 7 p. m., a student at a well-known college was shot in the abdomen with a 32 caliber bullet, the missile first passing through a door panel. He was rushed to a hospital in the same town and was attended by local physicians. A surgeon was not summoned until the next day, and it was at least twenty hours subsequent to the shooting when he came under the care of competent surgeons. An inspection showed a healthy, well developed young man, about 20 years of age, with a large pistol-wound in the lower right side of the abdomen. He was suffering considerable pain, had an anxious expression, had vomited frequently, pulse was about 120 and thready, abdomen hard and tender, and the mouth temperature was but little elevated. He was at once taken to the operating room, anesthetized, and the abdomen opened through the right rectus muscle. A large quantity of dark-colored, ill-smelling fluid at once escaped through the incision. The intestines were red and covered with lymph, and when the nearest loop of intestine was withdrawn three ragged holes were found, in close proximity, in the ileum. After stripping the fibrinous exudate from the margins of the openings they were closed in the usual manner, with silk sutures. Four drains were inserted into the pelvic cavity and the patient returned to bed in pretty good condition. He was then placed in Fowler's position, and rectal instillation of hot water instituted. He did not respond favorably to the treatment, though the vomiting ceased and the abdomen remained flat, and he died about forty-eight hours thereafter.

In domestic brawls most penetrating wounds are inflicted by pistol-shots, and a single projectile may cause from one to twelve perforations of the intestines and other viscera. In a case of my own in which there were two shots, one passing from before backward and the other in the opposite direction, there were twenty-five perforations of the intestines, one of the mesentery and two of the bladder. Rifle-shots are not so common in civil life, but may be received either by accident or by design. In similar manner, injuries from the discharge of shotguns occur occasionally, and, when close to the object, the lesions may be very extensive and ghastly. At a greater distance there may be multiple perforations of the intestines. My colleague, Dr. J. Holmes Smith, operated successfully on a patient in whom there were fourteen perforations from a load of bird-shot. Very occasionally lesions are produced by air-guns, toy pistols and toy cannons. I have had one case in which boys firing a toy cannon loaded with buckshot caused a perforating wound of the stomach. Stabs with knives are not infrequent and occasionally similar injuries are inflicted with scissors or with other pointed objects. In one of my cases a man with melancholia inflicted serious injuries with a pair of shears found in a barn. Pistol-balls usually lodge in the body though at times

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

they pass entirely through, having a wound of entrance and one of exit. It is absolutely impossible to determine the amount of damage done except by a laparotomy or a post-mortem examination. Projectiles passing transversely or obliquely across the abdominal cavity can scarcely fail to produce many and scattered lesions.

SYMPTOMS

While there may be positive signs of penetration and of perforation of the viscera, such is not usually the case. There may be vomiting of blood which would suggest an injury to the stomach or duodenum; or bloody stools indicating lesions of the intestinal tract or blood in the urine or the escape of fecal matter, bile or urine from the external wound, or the protrusion of the omentum or intestines. These signs, however, are usually absent and the diagnosis of penetration must be made from other phenomena. Shock may or may not be present, but it is of no special diagnostic significance. In many cases it is not present and when present it is no criterion of the injuries sustained. If the shock is persistent it usually indicates hemorrhage. The presence of concealed hemorrhage may be suspected from pallor, weak pulse, clammy skin, and the presence of shifting areas of dullness in the flanks.

The most manifest sign of a penetrating lesion is the location of a pistol or stab wound on the front or side of the abdomen, and this justifies an exploration. More difficult it is to decide whether wounds of the thorax, back, pelvis, scrotum and buttocks also penetrate the abdomen. In such cases we must rely on general symptoms to guide us in our diagnosis and treatment, such as increased frequency of the pulse, vomiting, pain, tenderness and rigidity of the abdominal walls, with or without elevation of temperature. We should try to ascertain not only the character and size of the weapon and projectile used but the distance of the patient from the assailant, as well as the position of the assailed when shot or stabbed. A pistol or stab wound located over the abdomen is sufficient justification for an exploration of the wound and of the peritoneal cavity. Symptoms are misleading and one should not wait to see if deleterious symptoms may develop but should ascertain by sight and touch the true condition of the internal organs. Patients in whom there is a reasonable suspicion of penetration of the abdominal cavity should be subjected to laparotomy without delay.

PROGNOSIS

The prognosis of penetrating wounds of the abdomen is always grave, and depends on many factors, such as the size and nature of the vulnerating body, the organs and structures injured, the fulness or emptiness of the hollow viscera, the presence or absence of serious hemorrhage and especially on the time at which the case comes into the hands of the surgeon, as well as on the treatment that has been instituted previous to coming to the surgeon. In perforating wounds of the hollow organs death almost invariably occurs if the patient is not operated on. In some penetrating wounds of the stomach and large intestine death does not occur, as the mucous membrane may become everted and so plug the opening, or in the case of the large intestine the perforation may be extraperitoneal and the intestinal contents may not enter the peritoneal cavity. Wounds of the solid organs are not invariably fatal even when left to

nature. I do not believe that the results of laparotomy and suture of the lesions are likely to be much better than those that have been attained hitherto. The general mortality of the operative treatment of penetrating wounds of the abdomen is at least 50 per cent. and it is not likely to be much, if any, less, if the cases are honestly reported. Some operators will have better success than others, either because of superior skill or on account of having to deal with less serious injuries. Complicated injuries such as penetration of the chest and diaphragm, fracture of the ribs or pelvic bones, injuries of the vertebrae and spinal cord, and serious loss of blood must always increase the mortality. Stab wounds are less serious than gunshot injuries, as the lesions are more localized and clean-cut, and are likely to be less extensive; but the hemorrhage is usually greater. The prognosis will also be affected by the age, general health and physical condition of the patients. Very young persons as well as the aged, debilitated and obese are not likely to survive such injuries, whether operated on or not.

TREATMENT

When a person is shot or stabbed in the abdomen no probing of the wound should be done, nor should it be interfered with in any manner except to apply an aseptic dressing, or if that is not at hand, to lay a piece of clean cloth over the injured area. The patient should then be transported to a hospital without delay, and be placed in the care of a competent surgeon; or if a hospital is not accessible he should be taken to the place at which he is to remain, and the most competent physician available summoned.

The patient's abdomen should now be thoroughly cleansed, or painted with iodine, and the track of the bullet should be incised and followed, if there is any doubt that it has penetrated the peritoneal cavity. Sometimes it may be best to open the abdomen through the bullet wound, but generally the best incision is in or near the midline, as it permits a more thorough exploration of the viscera. If the patient is shocked it is usually due to hemorrhage, and he should be infused intravenously with salt solution and the operation proceeded with. Bleeding should be controlled by clamps and ligatures. In gunshot injuries the bleeding is usually not great, but large vessels may be lacerated and the hemorrhage be severe. In stab wounds the hemorrhage is often severe. Sometimes it will be necessary to compress the aorta or the vena cava in order to control the hemorrhage. Wounds of the liver, kidneys and spleen often bleed freely, and may be controlled by suture and packing; or in the case of the kidneys and spleen by removal of the organ. After attending to the bleeding the viscera should be explored systematically for perforations, which should be closed with the usual forms of intestinal sutures. When the intestinal perforations are close together it may be necessary to resect the intestine and perform circular enterorrhaphy or lateral anastomosis, which may also be necessary when the wound is on the mesenteric border of the intestine or when the mesentery is detached. After making a careful examination of all the viscera that are likely to have been injured, the peritoneal cavity should be flushed with hot salt solution and ample drainage provided, both at the seat of the injury, and in the pelvis. The abdominal incision is partially closed, leaving room for the exit of the drains. Subsequently the patient

is placed in Fowler's position, and if the perforations are not situated too low down, the rectal instillation of hot tap-water should be commenced at once.

This is in brief an outline of the treatment of penetrating wounds of the abdomen according to my understanding of the subject. In all intestinal and visceral injuries, whether perforation from typhoid ulcers or ulcer of the stomach or duodenum, or sub-parietal traumatism, or perforating lesions of the hollow organs from gunshots or stabs, the treatment should be a laparotomy, and the substitution of methods of precision for those of doubt and uncertainty.

PENETRATING WOUNDS OF THE ABDOMEN IN MILITARY PRACTICE

Following the suggestion of Marion Sims in 1881, as the result of his observations in the Franco-Prussian war, it was hoped that a great lessening of the mortality of penetrating wounds of the abdomen as the result of early operation would occur in subsequent conflicts. This anticipation, however, has not been realized. It was early seen in the Spanish-American war and the Philippine insurrection, that serious injury to the abdominal viscera was frequently recovered from when left to nature, while those patients who were subjected to laparotomy almost invariably died. This unexpected result has been still further confirmed by the observations of surgeons in the Anglo-Boer and Russo-Japanese wars, and in the recent struggles in the Balkans. The conditions in the field are entirely different from those in civil life. Many of the wounded die on the battle-field before any assistance can be afforded them; but even when they do not speedily perish, there is no time or opportunity to undertake such operations when they can be done with any hope of success. The confusion, hurry, insanitary surroundings, flies, dirt, dust and often lack of water, all combine to render it almost or quite impossible to secure asepsis, and make abdominal exploration exceptionally unsafe.

As has been stated, a considerable proportion of those who have penetrating abdominal wounds, with probable visceral lesions, recover if left alone. The reason for this unexpected result is to be found in the character of the modern weapon. The projectiles from the modern army-rifle are long, pointed and narrow, steel or nickel jacketed, and are propelled with great velocity. At close range they make ragged and generally fatal wounds, but at the ordinary battle ranges they make clean wounds and usually pass entirely through the body. The intestines are either pushed aside or the perforations are small and without leakage. The missiles themselves appear to be aseptic or at least cause but little trouble. It seems impossible that a rapidly moving projectile could traverse the abdominal cavity obliquely or transversely without causing perforations of the hollow organs, but such seems to be the case in some instances. As many of these patients recover under expectant treatment, and but few under operative methods, military surgeons in the field are not justified in performing laparotomy in this class of cases.

When gunshot or stab injuries of the abdomen are inflicted while the troops are in garrison and can be operated on as early as in civil practice, it is my opinion that they should be subjected to the same treatment, that of laparotomy and repair of the lesions inflicted.

SUMMARY OF CASES

My experience is limited entirely to cases occurring in civil practice.

The total number of cases treated by me and my personal assistants has been 44.

Cases in which laparotomy was not done, 6; recovered, 2, or 33 per cent., died, 4, or 67 per cent.

Penetrating wounds of the abdomen in which laparotomy was done, 38; of which 21 recovered, or 55 per cent., and 17 died, or 45 per cent.

Penetrating wounds with perforations of the hollow viscera 31; of which 15 recovered, 48½ per cent., and 17 died, 51½ per cent.

Gunshot wounds with perforations of the hollow viscera, 25, recovered 10, 40 per cent., died 15, 60 per cent.

Stab wounds with perforations of hollow viscera 6, recovered 5, 83 per cent., died 1, 17 per cent.

Cases in which the liver and spleen and other structures were injured, but without perforations of the hollow organs, 7; recovered 6, 86 per cent; died 1, 14 per cent.

The stomach was perforated in 11 cases, with 5 recoveries, 45½ per cent., and 6 deaths, 54½ per cent.

The intestines were perforated in 29 cases, with 15 recoveries, 51¾ per cent., and 14 deaths, 48¼ per cent.

The urinary bladder was wounded but once in 44 cases of penetrating abdominal wounds. The gall-bladder has not been injured in any case of my own; but I have seen a case in the hands of a colleague, followed by recovery.

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ABSTRACT OF DISCUSSION

DR. ERNEST LAPLACE, Philadelphia: I wish to express my approval and appreciation of the conservative stand taken by Dr. Winslow on this important subject. There is but one question at issue—to operate or not to operate. Statistics are often misleading. We must adopt a policy as to whether it is right in cases of penetrating wounds to undertake an exploratory operation at once provided this can be done with modern requirements of surgery. I say unhesitatingly yes under all circumstances. It is the patient's only chance and it cannot be given to him too soon. Should a fatal termination take place without surgical interference then somebody has blundered in letting the precious moment pass by when operation might have saved the patient. This policy is to my mind the surest one for saving the greatest number of patients.

DR. CUNNINGHAM WILSON, Birmingham, Ala.: Dr. LaGarde in his recent book has doubted the advisability of operating on patients in military practice. I see no reason in this day why a man should any more neglect to operate on a gunshot wound of the abdomen than he would on a typhoid perforation. I think they are both in exactly the same class. We have probably had patients in both conditions get well. Another point on which I do not quite agree with Dr. Winslow is the question of hemorrhage in gunshot wound of the abdomen. It has been my experience that it is really, in recent cases, a question of the amount of hemorrhage. The mortality in all cases of this kind is due to the great amount of blood lost, making very little difference how many perforations there are. A few years ago I reported at the Louisiana State Medical Society a series of twenty-five of my personal cases, with ten deaths. I flattered myself on the recoveries, but I think it was because I happened to get a run of pretty good cases. Since that time I have had twenty-two or twenty-four cases and I have almost reversed myself. I have had instead of 65 per cent. recoveries, a mortality of about 65 per cent. The thing that I have not been able to understand is

why the military surgeons do not prepare themselves, or will not be prepared, to operate on such conditions in war as well as in civil life.

DR. JACOB FRANK, Chicago: Recently I have contributed to the *Military Surgeon* and the *Deutsche Militärärztliche Zeitschrift* articles on this very subject from the point of view of the military surgeon. I agree with Dr. Winslow in the practice of gunshot wounds in civil life. I carried out the same treatment in my civil practice as does Dr. Winslow, and I cannot see why this same treatment cannot be practiced in military surgery, provided we have the proper equipment and surroundings. The reason military surgeons say, as does Dr. Winslow, leave these wounds to nature, is because when a man is shot in the abdomen on the firing line he lies there from four to ten hours or even longer before he is carried back to a first-aid station. There the wound is sealed up with a so-called first-aid packet or dressing and the patient is sent to the field hospital. Meanwhile twelve to twenty-four hours elapse before the patient reaches the hospital. On arrival septic peritonitis is so pronounced that it is too late to operate, and if operation is performed the results are disastrous. Why do they do this? To prevent ectogenic infection. Is there more danger of infection on the battlefield than in a large city where everything is teeming with bacteria? What is accomplished when the wound is sealed up? The germs within are sealed up, and, where can be found a better place for the propagation of, say, the colon bacilli than in the abdominal cavity? I can readily see why so many die and why they advise against operation in perforating gunshot wounds of the abdomen. It is not an easy matter to get the government to furnish the proper equipment to operate on these patients in the field; however, this could be supplied. If instructions were given to introduce immediate drainage for the purpose of allowing the bacteria, intestinal contents and gases to escape through the wound, there necessarily would result less danger to the peritoneum than from sealing up the wound. We are told that the field is dirty and that the attendants' hands are soiled; but dirt is not necessarily identical with pathologic germs. The great cry has been the danger from tetanus. We know that there is less danger from tetanus on a field that has not been trampled over for months or years than in a large city with an infection-spreading population! Let us suppose that a drain has been introduced soon after receipt of an injury. When such a patient reaches the field hospital an opportunity is afforded the surgeons for individualization. They will either renew the drainage or operate, as conditions indicate. Let us have this plainly understood, that by sealing up this class of wounds we probably prevent infection from without but positively invite the most virulent infection from within. In my judgment, the avoidance of the latter will mean the saving of many lives doomed from the beginning unless nature is assisted, and this can be accomplished only by drainage plus the usual conservative treatment.

MAJOR CLYDE S. FORD, Washington, D. C.: As a military surgeon I feel the onus of defense of my colleagues, inasmuch as their practice of non-interference with abdominal gunshot wounds in war seems to be questioned. From my observations in the Balkan wars, I have no doubt that the expectant treatment of gunshot wounds of the abdomen, in military surgery, is rational and is amply justified by experience. Among 500 cases in my service in Constantinople all of the patients with abdominal wounds when admitted were on the way to recovery notwithstanding the danger, distress and lack of transportation in the flight of a routed army. Many cases, owing to the essential injury or abuse, must have perished on the field. I can offer no comparisons, in figures, but as many of these patients recovered without operation, and as the decidedly great majority died with operation in the field, it seems probable that the soldier will fare better with his abdominal wounds left untouched. In Constantinople twelve cases of abdominal gunshot wounds were received in a military hospital within twenty-four hours after occurrence; the patients were all operated on and all died. No question need be raised as to the skill of the operator, or care in the

hospital; both were under the direction of a most capable and scientific German surgeon, Wieting Pasha, and were superior to anything that could obtain in the field. In an evacuation hospital in the Bulgarian army at Kustendil, 10,000 wounded were admitted within a month. Two thousand of these were first treated by a Bulgarian colleague and myself—500 in one day. The hospital, in a high-school building, had fair facilities for aseptic surgery. Our patients—most of them—were carried four days in bull carts, over the roughest mountain roads, and many of them bore abrasions on their backs to mark the journey's trials. Abdominal wounds were found resolving spontaneously or with localized abscess or with general peritonitis. In the latter class the twenty patients operated on all died. One accidental wound received in camp adjoining the hospital was operated on within six hours and the patient died. Incidents of transportation, before and after operation, lack of operative facilities and deficiencies in postoperative treatment, furnish positive indications for non-interference. It has been said here that the surgeon must always try to do something—the best he can—for these cases, but it does not follow that he must try an operation. Nature's trial is sometimes better for the patient than the surgeon's interference. In the German and Austrian armies instructions are issued to the sanitary service, in unequivocal terms, that gunshot wounds of the abdomen are not to be subjected to operation in the field. Von Oetlinger is the authority for this practice and his conclusions are based on experience with military conditions. Dr. Winslow's paper has been edifying and instructive and his conclusions from his experience in hospitals, in civil life, are convincing, but the rule of non-interference with abdominal wounds in war is based on other conditions.

DR. F. N. McRAE, Atlanta, Ga.: Those of us from the South have seen more than an average number of penetrating wounds of the abdomen. In Atlanta we see a great many in civil practice. There are several little expedients. Our statistics will never be fair until they state the length of time elapsing between the reception of the injury and the resort to operation. An operation done within an hour gives a patient 75 per cent. better chance than an operation done six hours after the injury. An operation done after brief transportation gives a patient a much better chance of life than operation done after long transportation when shaking up tends to disseminate infection in the abdominal cavity. Dr. Parker, then of New Orleans, said "get things clean, get into the abdomen, do your work and get out." Chronic surgery has no place in penetrating wounds of the abdomen. The surgeon must get to his work quickly, do it thoroughly and then get out. One of the expedients I found was slipping a loop of catgut around the intestine to mark the beginning point, trace, wash off with salt solution and close the perforations as you go. The late Dr. Douglas of Nashville, Tenn., collected statistics of those cases flushed and those of the dry toilet. The statistics were in favor of the dry toilet. I do not think flushing the abdomen is good practice in many cases. It tends still more to the dissemination of the infection. The location of the wound has a great deal to do with the results. The patients who recovered from wounds of the large intestine had extraperitoneal wounds as he stated. The other point mentioned that is of great value is the removal of the spleen and kidney when they have been seriously injured. I know of deaths in several instances following attempts to save a kidney when extensively lacerated. These patients almost always die unless nephrectomy is performed at the time of operation.

DR. WILLIAM L. RODMAN, Philadelphia: The paper by Dr. Winslow is safe, sound and sane in all particulars. I would particularly make the point with reference to side to side flank feeling. Not only may you have as many as twelve wounds, but I had one boy shot accidentally with a rifle with twenty-one perforations. As he was gotten into the hospital within one hour after the accident he was operated on immediately. The military surgeons, though, I am satisfied are right. The difficulties on the battle-field are insuperable. In the first place, just as Dr. McRae said, it is the time at which

the operation is done. He spoke of Douglas' statistics; he quoted Siegel's statistics. I think I can recall those statistics exactly: If the operation is done within the first twelve hours the mortality is 15 per cent., the third twelve hours it is 67 per cent., and if it is done after that time it is over 70 per cent.; but even in late cases men sometimes get well. One man was shot Friday morning, carried over a rough road, was operated on the following Sunday at 12 o'clock, which you see is the time I specified. He had general peritonitis and a stormy convalescence, yet he recovered. Again, I have operated early in cases in which the patients died. I think the whole question hinges on the time, the damage wrought and particularly whether solid or a hollow viscus has been injured. I absolutely agree with Dr. Winslow that the small ball going with many revolutions a second and cutting like a knife, may go through the liver and do practically little damage, or through the lungs, and these men are often on the firing line within a short time. As to the last question raised by Dr. McRae, I think he takes the correct stand. It also depends on the amount of soiling of the peritoneum. If you operate within the first six hours, where the mucosa acts as an ectropion, plugs the wound, and there is some sepsis, there will be no extravasation; but it comes later. If there is gross soiling, however, the only thing to do is to flush and make an opening above the pubis and drain. In the early cases in which there is no visible soiling, flushing does harm if the peritoneal cavity be full. I think Dr. Winslow has given us many accurate statistics. In my own experience gunshot wounds of the abdomen have been very fatal and I think he is right that 50 per cent. will get well and 50 per cent. will die.

DR. RANDOLPH WINSLOW, Baltimore: Dr. Frank is a brigadier-general while I am a first lieutenant in the medical reserve corps, and I would like to take orders from him in military surgery, but I am afraid that from what I have read, not from what I have seen, it would be quite difficult to do a safe laparotomy on the battle-field. I would not like anyone to suppose that I flush every abdomen. It is only in case there is soiling, and perhaps not always then.

ABDERHALDEN'S TEST IN THE DIAGNOSIS OF CANCER*

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Statistics, together with the dreadful nature of the disease, demand that any and every method proposed for the early diagnosis of cancer should be thoroughly and impartially tested. Emil Abderhalden of Halle, Germany, recently presented to the medical profession a biologic test that is demanding the closest attention. Time alone can thoroughly prove the accuracy of his test, and only as impartial reports of large numbers of cases examined are offered by reliable workers. It is readily apparent by a casual review of the literature pertaining to the test that the differences in the results obtained are due to some variation as to technic, selection of tissues used as fundaments, unless the test is unreliable. Frankel states that the Abderhalden reaction was not reliable in the cancer cases examined at the research institute at Heidelberg, while Frank and Heimann, Marcus, Epstein, Erpicum abroad, and Lowry in this country report more favorable results.

Apparent errors in the specificity of the test do not appear to be evidenced by malignant conditions failing to give a reaction, as much as the finding of a positive reaction in individuals almost certainly not malignant. My experience with this test would indi-

cate that there are some conditions clinically not malignant that occasionally give a positive malignant reaction when not expected; as, for instance, certain pathologic conditions, as myomas of the uterus, and even the physiologic condition of pregnancy in a few instances, as has also been noted by Frank and Heimann. Especially is such a reaction to be obtained if a cancer of the uterus were used as the prime fundament. The uterine cell in such tissue is digested instead of the cancer-cell. For this reason a cancer of the uterus should never be used for making the test. Data based on such work are necessarily unreliable (Table 1). The majority of positive reactions tabulated as errors in my clinically non-malignant cases were secured by the use of such tissue, used for a time without recognizing its treacherous nature. It is notable that all of these cases possessed a distinct pathologic uterine condition—myomas, metritis and endometritis. The elimination of these cases in my series greatly increased the percentage of accurate

TABLE 1.—CLINICAL CLASSIFICATION OF EIGHTY-TWO ABDERHALDEN REACTIONS

CLINICALLY MALIGNANT		Reaction	
Location of Known Cancer Growth	Positive	Negative	
Breast	3	..	
Uterus	3	..	
Stomach	1	..	
Liver	2	..	
Sigmoid	2	..	
Cervical Glands	1	..	
SUSPICIOUSLY MALIGNANT		Reaction	
Location of a Suspicious Tumor	Positive	Negative	
Breast	2	1	
Uterus	10	..	
Stomach	10	4	
Liver	..	1	
Gastro-Intestinal	4	1	
Sigmoid	..	1	
Bladder	2	..	
Testicle	1	..	
Thyroid	4	..	
Congenital Nevi	1	1	
Pancreatic Diabetes	1	..	
Cancer of the Tongue	1	..	
Ulcer of the Tongue	1	..	
CLINICALLY NOT MALIGNANT		Reaction	
No Cancer Manifestation of any Degree	Positive	Negative	
Normal Males	..	3	
Normal Females	..	2	
Pregnant Condition	7	7	
Simple Hyperthyroid	..	1	
Sciatica	..	1	
Uterine Disturbances	2	..	
Peritonitis	..	1	

interpretations, in nearly one hundred examinations, largely clinical as well as experimental. There were, however, a few with which by repeated examinations with indifferent cancer tissue only a positive reaction could be obtained. Of these one has to class them either as errors, or admit the possibility of an individual giving the test that has harbored an invasion and recently dispelled it (Vaughan), or possesses an active invasion (second-degree cell proliferation of Mayo) that had not at the time of the test made itself manifest by even suspiciously clinical symptoms. I am led to consider the latter possibility by the developing histories obtained in several of these cases since the making of the tests. That is, they have progressed to a third-degree proliferation. I admit that in the remaining few cases there is absolutely no reason as yet for thinking the test other than erroneous.

PRACTICAL APPLICATION

The differences of opinion that arise relative to the findings in the suspiciously malignant cases develop the practical application of the test. The finding of a

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uterus, as previously mentioned. Metastatic glandular tissue is far preferable to tissue from the primary invasion. It usually contains a larger proportion of actual cancer-cells than any other tissue available.

Fresh tissue secured from a person accidentally killed should always have first choice. Tissue from the operating-table usually has to be accepted and is far preferable to tissue obtained at necropsy. Tissue received at necropsy that requires many repeated boilings to render it negative to ninhydrin should be condemned. When tissue requires many repeated boilings, there is such an amount of the protein material already broken down, at or near the amino-acid stage by decomposition, that it reacts to ninhydrin even though it may not have been acted on in the incubator by its accompanying serum. Bad tissue explains practically all of our erroneous findings. Bad thimbles come second.

Tissues used as substrate or fundament should be accompanied by a carefully prepared statement concerning the history of its donor, together with a microscopic study. Series of cases reported should be accompanied by a detailed description of the tissues used as fundaments. It will be evident from such data that there is a great difference as to the reliability of different tissues. It will also materially aid in standardizing the technic and value of the test (Table 2).

Providence determined circumstances leading to the possession of the first cancer-tissue used in my research work. The results obtained with this tissue were very gratifying, and the reactions were cleaner-cut, giving a distinctly lower percentage of possible errors than some tissue I have been obliged to use since. This tissue was a lymphosarcoma of the cervical and retroperitoneal glands. The all-cancerous nature of this material determined its value. A careful study of the accompanying tables will readily demonstrate the most desirable histopathologic requirements of the prime fundament. Combinations between prime and secondary fundaments suggest the possibility of being able to roughly locate a malignant invasion (Lindig, Kabanow). Varying the combination formulas of fundaments in reexaminations is of distinct advantage in suspiciously malignant investigations (Table 2).

I fully realize the fact that the histories tabulated as confirming the accuracy of the test are in some ways possibly unreliable. I have, however, endeavored to so use only such cases as gave very definite clinical manifestations, or those in which the cause of death was due unmistakably to the effects of a malignant disease. I readily appreciate that the only absolute solution of the problem is the number of malignant cases examined that give a positive reaction in which a microscopic diagnosis is able to verify the validity of the reaction. There will be, however, a border-line class of cases giving the reaction in which pathologists may differ, owing to the presence of a positive reaction in very early malignant cases, microscopically not well defined.

SUMMARY AND CONCLUSIONS

1. Keep carefully prepared histories of all cases examined.
2. There should be a follow-up interest, especially in such cases as gave a positive reaction, not clinically malignant at the time of making the test.
3. Care in selection of fundaments should be observed, keeping a carefully prepared statement concerning their donor, with a microscopic study of each.

4. Varied association of data pertaining to patient and fundaments, with reaction obtained, is essential.

5. Reexaminations in determining the progress of the disease are of especial value.

6. As yet the test cannot be considered as strictly specific for the diagnosis of cancer.

7. A positive reaction, however, should receive careful consideration before calling it erroneous.

AUTHOR'S TECHNIC

My technic is given in detail, that the reliability of my work may be judged accordingly.

Only distilled water, distilled at the time of making the test, was used, except in a very few instances in the very first of my work. All glassware is carefully washed, drained, and rinsed with alcohol, followed by ether; it is then sterilized by dry heat. The entire work has been done in a room never used for bacteriopathologic work. All apparatus is reserved exclusively for this work. I have used a few of the 579 Schleicher and Schüll thimbles, but practically all of my work was done using the 579A thimbles, selected as follows:

The thimbles were first well soaked in cold water, then boiled for five minutes. When cool, they were placed on the inner end of the funnel-form stopper of my dialyzing chamber. This was done at first with bare, well-washed hands, but now I use rubber gloves entirely and handle the thimbles as little as possible, rinsing with sterile distilled water before replacing in my dialyzing outfit, previously filled with 15 or 20 c.c. of distilled water. Cotton plugs were placed and then the entire outfit was sterilized by steam heat. No part of the remaining technic allows of the possibility of contamination of the outer wall, or surrounding sterile distilled water. Chloroform and toluene were added through the side tube provided for this purpose. Sufficient toluene was used to overlie the surface thoroughly. The apparatus was then ready to receive the materials intended for dialysis. New thimbles were filled with 5 c.c. of a 1 per cent. silk peptone (Hoechst) solution, covered with 10 drops of toluene, placed in an electrical incubator for from fourteen to sixteen hours. After removal from the incubator, 5 c.c. of the diffusate were tested with 0.2 c.c. of a 1 per cent. ninhydrin solution. Only those thimbles giving a corresponding faint shade of blue color were reserved for further examination.

The reserved thimbles were then run, first with 5 c.c. of a 10 per cent. solution of egg albumin, and if any were found to give the ninhydrin reaction they were immediately discarded. By selecting only such thimbles as give a faint blue ninhydrin reaction in the first test, seldom one is found that is permeable to the albumins. New thimbles are never used in an actual test until they have been run at least twice with human serum and test negative, 5 c.c. of diffusate to 0.2 c.c. of a 1 per cent. solution of ninhydrin; examination is run in duplicate with a previously tested and satisfactory set of thimbles and the new thimbles judged accordingly.

I have always selected thimbles in groups of four, notching the top with one to four notches, and punching in the side just below the notches one or more holes; in any set of four, each has the same hole-punch as one 0 to four 0; or one 000 to four 000. Each set of thimbles is placed in a wide-mouthed container, of 120 c.c. capacity. The bottle was then filled with distilled water and the whole placed in a steam sterilizer for one-half hour. After removal and cooling, 1 c.c. of chloroform was added, and the surface of the chloroform-water was well covered with toluene. The cork stopper was put in place and the thimbles then set away in the ice-box, kept at a temperature of about 8 C. (46.4 F.). Control experiments demonstrate that only the thimbles barely permeable to the silk peptone solution are suitable for the cancer-test as cancer-tissue is quite readily broken down by the "protective ferment" in the dialyzing thimble.

Preparation of tissue, selected as previously suggested, must be complete in the removal of all traces of blood and

the saving of only that portion of the cancerous material that contains the smallest amount of near-normal tissue invaded. Such tissue is cut up into small pieces about the size of a pea, well washed, and then thrown into a large volume of boiling water, 10 parts by volume, containing 1 or 2 drops of glacial acetic acid, and allowed to boil for just five minutes. The tissue is then drained of its boiling water and again similarly boiled except that no acetic acid is used. The boiling is repeated in this manner for from three to six boilings, until the boiling-water gives not the slightest reaction with ninhydrin, using 1 c.c. of a 1 per cent. solution of ninhydrin to 5 c.c. of the liquor. Any tissue requiring more than five or six boilings is discarded. After the tissue has tested negative to ninhydrin, by boiling in bulk, the tissue is then placed in small quantities—about 15 gm.—in a 60-c.c. Erlenmeyer flask, and again boiled. After the contents of the flask have cooled, chloroform is added, and the whole covered with toluene, the mouth of the flask is plugged with cotton, and the tissue thus placed in the ice-box in the water in which it was last boiled. Whenever tissue is removed for use, the remaining tissue is similarly treated.

At least 30 c.c. of blood should be taken from the patient, either by venipuncture or actual bloodletting under strict aseptic precautions, and always using only dry glassware. The blood is usually collected by using a modified Jellinghaus-Losee outfit. Constant rigidity should be maintained in using only blood obtained before the morning meal, or if the blood has to be taken in the late afternoon, the patient should present himself without having eaten dinner; not even a lunch is allowed. The blood is allowed to stand at room temperature in the collecting outfit until the serum separates, which varies from three to twelve hours—usually four to six hours sufficing. Accordingly, blood collected at 8 o'clock in the morning is usually ready for setting up in the afternoon; that collected in late afternoon is ready next morning, but should be kept in an ice-box over night.

During the time that the blood is separating, apparatus required for the test should be made ready; and the fundaments to be used should be reboiled and made to test negative to ninhydrin, using 1 c.c. of a 1 per cent. solution to 5 c.c. of the boiling water. In reboiling the tissue, care should be taken to use ten times by volume the amount of distilled water as tissue to be prepared.

The separated serum is pipetted off from the collecting outfit into a centrifuge tube, and centrifuged at high speed until the serum is perfectly clear, and free from any reddish tint or cloudy appearance. One and one-half c.c. of such serum is placed at once in a small test-tube in the water-bath, maintained at a temperature of 56 C. (132.8 F.), for the purpose of inactivating this amount of serum, which is to be used as a control along with the prime fundament to be used with the untreated serum. At the same time that the serum is being inactivated, the dialyzing outfits as described in a previous article are sterilizing. After the outfit has been sterilized and cooled, chloroform is added through the side tube and then sufficient toluene to cover thoroughly the sterile, distilled water surrounding the sterile thimble free from all possibility of outside contamination due to the special construction of this apparatus. Each dialyzing outfit is labeled and the formula made up of various fundaments to be used, writing on the label the particular fundament and the amount of serum that each outfit is to receive. Then a small piece, from 0.5 to 1 gm., is dropped through the funnel-form stopper supporting the dialyzing thimble on its inner end, in spaced relation to the wall of the outer container. One c.c. of serum is then added to each (formerly used 1.5 c.c.) except to the one to receive the inactivated serum. After placing the serum, 10 drops of toluene are added, replacing the cotton plug, at which time the entire set is ready for the incubator. They are placed in an electrical incubator, at 37 C. (98.6 F.). Abderhalden specifies in the pregnancy test that dialysis should go on for from fourteen to sixteen hours; experience with his technic in the cancer test indicates that a shorter period, about twelve hours, gives better differentiation of color reactions, and so, better satisfaction.

After removal from the incubator, the funnel-form stopper supporting its dialyzing thimble and contents is removed. Five c.c. of the dialysate is placed in a calibrated test-tube, to which is added 0.1 c.c. of a 1 per cent. solution of ninhydrin. The test-tube with its contents is then boiled with its fellow in an electrical heating device so constructed that a definite, constant and predetermined heat is applied, boiling the contents of the test-tubes for exactly one minute (author's electric test-tube heater). By thus boiling the dialysates with ninhydrin, the ratio of evaporation is constant for each. After cooling for one-half hour, interpretations are made by the color reactions obtained. If the test has gone on satisfactorily, negative reactions will be apparent by the entire absence of any color in the contents of its test-tube. Positive reactions will manifest themselves by a distinct, usually not too deep, bluish-purple color in the contents of the test-tube. Such reactions are easy of interpretation as to reactions obtained. The association of all the reactions obtained, together with the particular formula for the test, is necessary for the making of a diagnosis. My most frequently used formula for a set of four thimbles is the following:

One thimble containing the prime fundament and untreated serum; one thimble containing the prime fundament and inactivated serum; one thimble with either serum or fundament alone, as might be indicated by a suspicion as to the reliability of either one or the other; the fourth thimble contains the secondary fundament, common to any particular series of studies. Invariably my secondary fundament has been a placental protein. In a few instances I have also used muscle-tissue, brain-cortex, and thyroid gland. When the interpretation of the test depends on the meaning of various shades of color reactions, it cannot be considered in any other way than unsatisfactory, and indicates the necessity for a reexamination. Whenever possible, controls should be run using the same formula either with a known normal or malignant. The larger number of my cases were run with a known control, but this was not invariable.

Gryphon Block.

A STUDY OF THE FERMENT ACTIVITY OF THE BLOOD-SERUM

DURING PREGNANCY AND UNDER NORMAL AND
PATHOLOGIC CONDITIONS*

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A large amount of work has been done with the Abderhalden test, using the dialysis method. Almost diametrically opposite conclusions have been arrived at by the various workers in this field. L. Flatow,¹ using an acetic acid coagulation method, and neutralizing with calcium oxalate, found that all serum has the power of digesting placenta. H. Kämmerer, M. Clausz and K. Dieterich² found that serum of non-pregnant individuals sometimes reacted positively, and that the serum from known pregnant individuals sometimes reacted negatively. Sunde,³ in eighty-three cases, found that the test corresponded to the clinical diagnosis in seventy-five cases; and that eight non-pregnant cases gave a positive reaction.

Stoekel⁴ believes that the proof of the specificity of the reaction is still lacking. He thinks that it, at

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1. Flatow, L.: München. med. Wehnschr., 1914, lxi, No. 9.

2. Kämmerer, H., Clausz, M., and Dieterich, K.: München. med. Wehnschr., 1914, No. 9.

3. Sunde: Norsk. Mag. f. Laegevidensk., 1913, lxxiv, 1234.

4. Stoekel: München. med. Wehnschr., 1913, No. 9.

present, is of little significance for general practice or forensic medicine. A. K. Pain,⁵ on the other hand, feels that with good laboratory technic the test is the most accurate of the present-day methods of diagnosis and ranks with the Wassermann and Widal tests. Williamson⁶ found that in twenty known pregnant cases the reaction was positive in all; while in thirty known non-pregnant cases the results were uniformly negative. In sixteen unknown cases, however, the reaction was wrong in two and doubtful in two. In other words, the reaction was of no value in the diagnosis of 25 per cent. of the unknown cases. Oller and Stephan⁷ conclude that, while pregnant serum contains proteolytic ferment that can be demonstrated by the Abderhalden dialysis method, the reaction is of little clinical value, because a relatively large number of non-pregnants likewise give the reaction. They mention Lichtenstein, Rubsamen, A. Mayer, Tschudowsky, Gambaroff, Stange and Aschner as supporting Abderhalden claims, but point out the fact that these investigators rarely show controls with normal serum or, what is of more importance, with serum from pathologic cases. Also that Aschner gets 30.5 per cent. positive reactions in non-pregnant cases. Mühsam, Hies and Lederer, Werner and Wininwarter consider the reaction as entirely untrustworthy. Noncommittal are Schafer, Ebeler and Lohnsberg, who report positive reactions in 12.5 per cent. of non-pregnant cases, Frank and Heiman, Frank and Rosenthal, Kohler and Deutsch.

E. Schiff⁸ concludes that the test is entirely reliable, but he gives no details as to his technic or controls. He admits getting seven weak positive tests and controls in thirty-six non-pregnant cases. Schwarz⁹ found forty-one known pregnant who gave a positive test, while thirty known non-pregnant cases gave a negative reaction. The latter cases included fibroids, pus-tubes, carcinoma and a few male patients. Jellinghaus and Losee¹⁰ do not deny the defensive ferment theory, but feel that the dialization method is not always correct in non-pregnant cases. They therefore do not recommend the test for diagnostic purposes, because errors in technic, responsible for poor diagnosis, cannot be found till after the test. Williams and Pierce¹¹ conclude that there is an increase of ferment in the blood during pregnancy, but that the ferment is not specific—a similar increase having been noted in other conditions.

Much of the work reported has been done with modifications of the original Abderhalden technic, which renders it totally unfit for comparison either with the original Abderhalden work or with that of other men who used Abderhalden's technic. Many men reported work, without giving detailed account of their technic and control experiments. Such work is of no possible value, and merely serves to increase the confusion that exists regarding the use of the Abderhalden test as a valuable addition to our diagnostic methods in obscure cases.

This work was undertaken to determine:

1. Whether there is a ferment constantly present in the blood of pregnant women that can be demonstrated by means of the Abderhalden dialysis method.

2. Under identical conditions does blood, normal or pathologic, contain a similar ferment which might give the same reaction?

3. If blood, from non-pregnant individuals, gives this reaction, what conditions are most likely to lead to a wrong conclusion when doing the test in a case of suspected pregnancy?

4. Will a quantitative estimate of the strength of the reaction assist in differentiating pregnancy from other conditions that might give a positive reaction?

In undertaking this work it was decided to follow Abderhalden's technic.¹² About thirty cases, pregnant and non-pregnant, were tested, in order to become familiar with the technic, and to be able to avoid the inevitable mistakes of the beginner. These results were not recorded.

In my opinion, at present at least, in order that the results may have a more uniform comparison, all Abderhalden tests should be made according to Abderhalden's technic. Only in this way can a sufficient number of tests be made to permit us to draw warranted conclusions as to the clinical value of the test. Various modifications, at the present state of our knowledge, merely serve to add to the confusion without throwing any real light on the subject.

THE ABDERHALDEN TECHNIC

The technic used in this work is here briefly described:

Preparation of the Placenta.—I was present at the delivery of the placenta and received it immediately after brief examination by the accoucheur. The amnion and cord were hurriedly removed with a scissors, and all large blood-clots washed away. It was then quickly cut into pieces the size of a hazelnut and washed continuously in cold water, with frequent changes and continuous squeezing with the hands till all blood was removed from the pieces. The tissue then looked white, and any pieces containing the faintest tinge of pink were discarded. The washing usually took about two and a half to three hours. The tissue was next transferred to a pan, containing about 1 liter of boiling water, and boiled for five minutes. The tissue was removed, rinsed and pressed repeatedly, and the five-minute boiling repeated. This was continued until 5 c.c. of the filtrate, after boiling the tissue with five times the amount of water, failed to give a reaction with 1 c.c. of ninhydrin on boiling one minute. The tissue had to be boiled and rinsed at least six times; and with some placenta eight and ten boilings were necessary. It was found that some placenta could not be freed from substances that reacted with ninhydrin; and these after repeated boiling had to be thrown away. After the filtrate from the boiling showed absolutely no color on boiling with ninhydrin, the tissue was placed in colored glass jars with chloroform, under toluene. It was reboiled three times and tested with 1 c.c. of a 1 per cent. solution of ninhydrin before each test.

Method of Obtaining Serum.—The blood was taken from the median basilic vein, by means of a clean, dry Luer syringe, and transferred at once to a clean sterile centrifuge tube. It was allowed to stand from three to twelve hours till the clot began to separate and press out the serum. It was then centrifuged at about 1,600 revolutions for four to five minutes. The clear serum was pipetted off, care being taken to avoid the formed elements. Hemolized blood was discarded at this juncture to avoid errors in reading the test, due to the ferment set free by hemolysis; 1.5 c.c. of the clear serum was inactivated in the water bath, at 60 C. (140 F.) for one hour and used as a control. In the later experiments 1 c.c. of serum was used according to later advices from Abderhalden.¹³ An equal amount of the clear serum was used for the test.

12. Described in Beitr. z. Klin. d. Infektionskrankh. u. Immunitätsforsch.

13. Abderhalden: München. med. Wchnschr., 1914, lxi, No. 8.

5. Pain, A. K.: Boston Med. and Surg. Jour., 1914, clxx, 303.

6. Williamson: Jour. Obst. and Gyn. Brit. Emp., 1913, xxiv, 211.

7. Oller and Stephan: München. med. Wchnschr., 1914, lxi, Nos.

1 and 2.

8. Schiff, E.: München med. Wchnschr., 1914, lxi, No. 14.

9. Schwarz: Am. Jour. Obst., 1914, lxi, No. 1.

10. Jellinghaus and Losee: Am. Jour. Obst., 1914, lxi, No. 4.

11. Williams and Pierce: Surg., Gynec. and Obst., 1913, xvi, 411.

The Diffusion Tubes.—Schleicher and Schüll 579 dialyzing tubes were used. These were first tested with albumin to insure their impermeability to it. Any tubes found to let through albumin were discarded. The remaining tubes were tested with a 1 per cent. solution of silk peptone from Hoechst Farbwerke von Meister Lucius and Bruning. These tubes that let through the peptone solution at the same rate, as measured by the depth of color on boiling 10 c.c. of the diffusate with 2/10 c.c. of a 1 per cent. ninhydrin solution, were reserved for future use in making the test. The remaining tubes were discarded. After testing with peptone solution, the tubes were allowed to stand in a liter of distilled water for twenty-four hours in order to remove all peptone solution that might remain in the tube wall. They were then boiled for about two minutes, and stored under toluene in distilled water. They were reboiled for about one minute just before each test.

The Test.—One c.c. of clear serum was introduced into the diffusion tube, together with 1 gm. of placenta protein. Care was taken that all placenta protein was below the surface of the serum to prevent error from decomposition of pieces, adhering to the sides of the dialyzer, and so not covered by the toluene. The outside of the parchment was carefully washed off with distilled water. The diffusion tube was next placed in a large test-tube, containing 20 c.c. of sterile distilled water. A layer of toluene was placed within and without the dialyzing membrane to prevent the growth of bacteria and to prevent evaporation.

The Controls.—The controls, with the exception of the first twenty-five to thirty cases, were made exactly the same as the test, excepting that the serum added had been inactivated at 60 C. for one hour. In the first cases the serum alone, without the placenta, and not inactivated, was run as a control. The importance of running an inactivated serum control and placenta is that a negative result obtained thus must mean that there are no dialyzable substances in the serum, and that the placenta itself is not the source of the dialyzable substances, and hence must have been properly prepared. The controls were found to be uniformly negative in this series, which, to my mind, is the strongest point in favor of proper technic. In many cases the tubes used as "test-tubes" on one day were used as "control-tubes" on the succeeding day in order to detect leakage of albumin that might occur after a tube had been used several times. Bacteriologic examination was made of the content of the diffusion tubes in cases in which an unexpected positive reaction occurred, in order to rule out the possibility of the digestion products being due to bacterial decomposition. In no case was more than an occasional organism found.

Dialyzation.—The period of incubation in the first twenty-five to thirty cases was sixteen hours, according to Abderhalden's original suggestion; later it was increased to twenty or twenty-four hours because difficulty was experienced in getting strong enough reactions in the positive cases to admit of a definite conclusion as to whether the test was positive or negative. Abderhalden,¹³ later, has advised the same modification of his technic. Ten c.c. of the diffusate from the test- and control-tubes were boiled with 0.2 c.c. of a 1 per cent. solution of ninhydrin. Test and control were boiled over the same flame with the same amount of ninhydrin and as near as possible at the same rate. They were read in all cases after standing one-half hour. All glassware used in the tests was cleaned by allowing to stand over night in potassium dichromate and sulphuric acid, removed, rinsed, and placed in strong potassium hydroxide solution, rinsed in tap-water and then in distilled water, and dried. This was also attended to personally, in order to obviate errors in testing, due to traces of acid or alkali in the tubes.

FINDINGS

Clinical Material Examined.—In all 145 cases were examined.

Pregnancy Cases Examined.—Twenty-nine cases were examined. Most of these were known pregnant at the time of examination and the majority were seven months pregnant or more. Two cases gave

negative reactions. One of these tests, an unknown in the twelfth week after menstruation, was made while using the sixteen-hour incubation period; and the error might have been due to the fact that the reaction was so weak that it could not be read. The other was an obscure case in which the uterus was enlarged to the size of a six months' pregnancy but no fetal heart-tones could be heard, nor could fetal movements be felt, or fetal outlines be mapped out accurately. The Roentgen ray revealed a shadow of the fetal head above the brim of the pelvis, and the shadowy outline of the vertebral column. The fetus might have been dead, and the reaction negative on that account. I have not had an opportunity to study a case in which the fetus was dead, and do not know how the reaction results under such conditions. The positive reactions varied from very weak to very strong positives. There seemed to be no way of telling which cases would give a weak, and which cases a strong reaction. On the whole, cases from four to six months appeared to give the strongest reactions. Ten cases reacted positively, and six were weakly positive, leaving eleven that reacted strongly positively.

Puerperal Cases.—Twelve cases were examined, varying in time from just after the completion of the third stage of labor, to five months after an abortion. One case gave a strong positive, five gave a positive and six a weak or very faint positive reaction.

Lobar Pneumonia.—Nineteen cases of lobar pneumonia were investigated. The reaction was negative in only two cases and in one of these dialyzation proceeded only sixteen hours and a negative result might be attributed to that. The other was a case in the third day of the disease. On the whole, the five cases examined before the crisis gave considerable weaker reactions than those examined just after the crisis.

Acute Rheumatic Fever.—Having in mind the close relationship of the causative organisms of pneumonia and rheumatism, it was decided to test out the proteolytic power of the serum in the latter disease, as well as in the former. Eight cases in all, including acute and convalescing cases, were examined. The reaction proved negative in one out of the eight tests. One test gave a strong positive. The other six gave a weak or very weak positive test.

Typhoid Fever.—Five cases were examined, varying from the second to the sixth week. The reactions varied from a faint trace to a weak positive in all cases, and were apparently more marked later in the course of the disease.

Tuberculosis.—This was next investigated. Six cases were examined, all in advanced stages of pulmonary tuberculosis, according to the clinical diagnosis. One of these gave a negative result, the other five a weak positive or a positive reaction.

Nephritis.—Eleven cases of nephritis were examined. They were mostly of the chronic interstitial type. Nine gave a positive reaction, two, weakly positive and one a negative reaction. Two cases at the verge of uremic coma gave strong positive reactions.

Carcinoma.—Eight cases were examined: six carcinoma of the uterus, one carcinoma of the stomach and one carcinoma of the bladder. Two negative reactions were obtained, two were positive and four weakly positive. There seems to be little, if any, relation between the extent of the carcinomatous involvement and the strength of the reaction.

Meningitis.—Five cases of meningitis were examined. These included two epidemic, one syphilitic and

two tuberculous forms. The reaction was negative in the syphilitic, one of the tuberculous and one of the epidemic forms. The other tuberculous and epidemic cases gave a faintly positive reaction.

Diabetes.—Five cases of diabetes mellitus were examined, in various stages of the disease. One gave a negative reaction, two a faint positive, one strong positive and one medium positive.

Fibroids.—Four cases were examined. Two were negative, one gave a very faint reaction and one a positive reaction. In the latter case sufficient time had not elapsed since the test absolutely to rule out the possibility of a pregnancy being coexistent.

Blood and Nervous Diseases.—Under this head are considered two cases of pernicious anemia, which gave weak positive reactions; one splenomyelogenous leukemia, which gave a strong positive reaction; one malarial infection, a few hours after the chill, which gave a strong positive test. One case of hypopituitarism gave a faint trace. One case of head tetanus, in the seventh day of the disease, gave a weak positive. One dementia praecox gave a trace. One case of scurvy in the convalescent stage gave a negative reaction. Three cases of syphilis were examined, all in the latent stages; two were found positive and one strongly positive. One alcoholic neuritis was strongly positive.

Normal Cases.—Seventeen normal or patients suffering from minor affection, not giving systemic reactions, were examined. Thirteen gave negative tests and four were positive. Of the latter, one had had a light meal one hour before the test, one was a case of chronic constipation, two were hernia cases just before operation, and it is possible that these patients might have eaten more than they admitted.

One case of suspected chorio-epithelioma was examined. The woman had passed a hydatid mole one year previous. She had flowed on and off ever since. The Abderhalden test was positive, but scrapings from the uterus failed to show malignant changes or evidence of recent pregnancy.

SUMMARY

From the results it would seem that there is a ferment present in the blood of pregnant and puerperal women in the vast majority of cases, and that it can be demonstrated by the Abderhalden dialysis method.

Under the same conditions normal blood sometimes, and blood from various pathologic conditions frequently, gave the same reaction. The strength of the reaction varied, with some exceptions, with the disease present in the case examined.

A large number of pathologic conditions may give a positive reaction; and hence would have to be ruled out when applying the test to a given individual for the diagnosis of pregnancy.

Quantitative estimation of the strength of the reaction is of little value in differentiating pregnancy from other conditions that give a positive reaction.

Abderhalden¹⁴ states his position very definitely on the reaction in non-pregnant individuals. He says:

The serums from gravid and non-gravid individuals differ from each other, among other things, in that the serum of the former contains a ferment that will digest placenta protein. This statement holds at least for normal non-gravidae. According to my experience and that of many other investigators this statement holds for pathologic non-pregnant cases also.

I have been unable, however, to find any data by him of a systematic investigation of other pathologic conditions using the same technic as used in the pregnancy test.

From these results it appears to me that the best working hypothesis to explain the phenomena noted here is the following:

In many conditions of altered metabolism, whether due to infection, malignant disease, pregnancy, the involution period of the puerperium, kidney lesions or certain nervous diseases, there is an abnormal amount of ferment in the blood. This may be due to:

A. Absorption of ferment by the blood from some source in the body, where a great amount of ferment activity is going on. Six such sources may be recognized by this work:

1. In pneumonia, especially after the crisis, when the lobes of the lung are undergoing resolution.

2. In pregnancy when there is a constant transfer of nutritive material from the mother to the fetus, and of waste material from the fetus to the mother, and the whole process carried on by anabolic and catabolic ferments in the chorionic cells. It is easy to structure so rich in ferment as the placenta.

3. In carcinoma, in which apparently abnormal ferment activity is going on in a poorly defined mass of tissue, invading and breaking down other tissue.

4. At the height of digestion, at which time there is absorption of the products of digestion and a large amount of fluid containing an immense amount of ferment is bathing the surface of a rapidly absorbing membrane. Were the positive Abderhalden tests when the serum is obtained at the height of digestion due to amino-acid content of the blood at the height of digestion, I fail to see why the inactivated serum would not contain just as many dialyzable substances as the active serum and therefore the control give the same color reaction as the test.

5. In malaria, when there is, at the time of the chill, a great destruction of red cells with the setting free of ferment.

6. In splenomyelogenous leukemia, in which there is a great increase in the formation of and destruction of white cells and destruction of the red cells.

B. In the acute infections recovery is probably due to the mobilization of the ferments by the body-cells, which either prevent the development of the bacteria or actually digest them and their toxins. Tuberculosis being in the advanced stages, almost always associated with secondary infection, might be considered as coming under the same heading as acute infectious diseases.

The reason for the reaction in diabetes is less apparent, but with the altered functions of the pancreas one might expect to find various disturbances in the tryptic or antitryptic power of the blood.

The positive reaction in chronic nephritis is not so easy to explain by this theory, but it is known that there is profound alteration in protein metabolism, which is essentially carried on by proteolytic ferments; and therefore it would not be surprising to find an abnormal amount of these in the blood-stream.

These points are merely mentioned here, and are not to be regarded as definite conclusions. It is my wish to go deeper into the subject, to see a wider range of diseases, and to examine more cases from each before trying to formulate definite conclusions. It is hoped that other workers will investigate along similar lines; and that such investigations will enrich

¹⁴ Abderhalden and Fodor: München. med. Wchnschr., 1914, Ixi, No. 14.

of the physician. It is of first importance, then, to be able to distinguish between elaborate and complicated methods of preparing food and scientific foods.

In all scientific investigations there must be care, system, and exactness so there can be no doubt about how the results were obtained; but in the search for scientific truth prodigious amounts of the most exact, painstaking work have been done, the only value of which has sometimes been to show that the truth was not found. Scientific work does not necessarily mean that the results will be scientific truth.

After a scientific principle has been discovered it is a waste of effort to employ in everyday work the tedious, exact, and often difficult methods of scientific research when equally good results can be had by simpler methods. Infant feeding is an applied science and in its application does not call for the methods of scientific research. The physician is called on only to apply in the best way he can, under existing circumstances, the scientific principles on which animal nutrition has been found to be based. He can originate his own methods and if they apply correct principles he will get as good results as if he used some other methods which were more complicated. Results justify any method that produces them.

Among the factors that have hindered a wider knowledge of the science of infant feeding among physicians has been the tendency to concentrate attention on a single point instead of viewing the subject broadly. At one time it was all bacteria; at another, all chemistry; again, feeding was to be mathematical, and finally there has been caloric feeding. While there is truth in all conceptions of feeding which have been proposed, the really essential thing has been largely overlooked, and that is that infant feeding is a matter of biology and must be governed by the broad laws of biology. Chemistry and physics are simply means to an end, and not the end itself, as has been too generally considered.

In dealing with chemistry and physics in living things, factors have to be taken into account which are not met with in the laboratory. For instance, it has been taught that food was taken into the cells by osmosis and the laboratory work on osmosis was accordingly considered final. But chemistry has undergone a revolution during the past few years, and Findlay¹ in lecturing on the new chemistry as applied to medical and biologic science, has called attention to the fact that it should be applied by the biologist who understands chemistry and physics and not by the chemist, because a membrane which in the laboratory will allow substances to pass through it in either direction by osmosis, when in the living body has the power of selection and will there allow water to go through in one direction and a salt in the other direction. It is this selective action of cells, membranes and tissues in the body that completely upsets chemistry as taught in the laboratory when applied without qualification to infant feeding, and it explains why one infant may select one form of food that another infant rejects.

The inability successfully to apply the chemistry of the laboratory directly to animals and plants has resulted in far reaching experiments to discover the principles on which successful animal nutrition is based. Not only have different foods been tried for restricted periods on adults, but different types of food

have been tried during the growing period to determine what effect such diets would have on bodily development. So instructive has such work proven that it has been applied to groups of animals continuously through several generations to exclude effects of idiosyncrasies of individuals. As a result of such work there stands out prominently the fact that the chemical and caloric standards of feeding of the past are not final.² The differences in the vigor, weight, and strength of animals and their offspring, fed on different foods of supposedly the same chemical composition and yielding the same number of calories, are so striking as to have led to a warning not to place too much dependence on the caloric value of food, it having been found to be but a rough guide at the best.

Other experiments have great significance in connection with infant feeding. It is a well established fact that the milk of an animal has essentially the same composition and digestive properties regardless of its food and that no method of permanently altering the properties of milk through food has been discovered. Attempts have been made to develop the bones of a fetus by feeding the mother large quantities of bone-forming materials, but the mother's organism excluded these materials. After birth the same materials, mixed with food of the young animal, produced very strong and large bones.³ It has long been known that colostrum differed from the later milk in its composition and in the digestive properties of its proteins, but it has only recently been discovered that the colostrum contains immunizing bodies protecting against streptococci, staphylococci and tubercle bacilli, which are not found in the later milk.⁴ It appears, therefore, that the power of selection by the organism extends to picking out for the offspring just what it needs at each stage of its development and putting it into suitable form, and it is evident that the foods of young organisms are highly specialized. With this knowledge, how inadequate appear the theories of feeding that look on food as a mere mixture of protein, fats and carbohydrates, or as a source of calories?

The foods that are the mainstay of life and the sole bases of the various dishes of the cook, excepting meat and fish, are milk, eggs, cereals, and legumes. These substances are the specialized foods supplied by parents to their offspring during the formative period, when there is the greatest demand for protoplasm-forming materials.

All living things have protoplasm as a common basis and need the same elementary substances for the formation of protoplasm. Skeletons differ, however, and in plants they are mostly carbohydrates and silicates, while in animals they are largely carbonate or phosphate of lime. In examining the food for developing organisms—milk, eggs, cereals and legumes—it is found that milk and eggs in addition to protoplasm-forming substances contain materials for bone formation, while cereals and legumes contain large quantities of carbohydrates to form the skeletons of plants. The protoplasm-forming materials of the cereals and legumes are all sufficient for some animals, but the absence of proper bone-forming materials is deleteri-

2. Physiological Effect on Growth and Reproduction of Rations Balanced from Restricted Rations. Research Bull. 17, Wis. Agric. Exper. Station.

3. Calcium and Phosphorus Supply of Farm Feeds and their Relation to the Animal's Requirements. Research Bull. 30, Wis. Agric. Exper. Station.

4. Famulener, F. W.: On the Transmission of Immunity from Mother to Offspring, Jour. Infect. Dis., 1912. Tunncliffe, Ruth: The Content in Antibodies of Normal Human Colostrum and Milk, Jour. Infect. Dis., 1912.

1. Findlay, Alex.: Physical Chemistry and its Applications in Medical and Biological Science.

ous. For rapidly growing animals the mineral matter of milk and eggs is of vital importance.⁵

Experimental feeding with restricted diets has shown that the more the integrity of the natural food for the young is disturbed, the less satisfactory is nutrition, and if the natural combinations are broken up too much nutrition fails. An adult seems to have a capacity for synthesis which is absent or not fully developed in the young, for adults have been found by experiment to be capable of taking one form of vegetable protein and from this alone producing the proteins of its offspring and the specialized proteins of milk, while this single form of protein alone failed to produce proper nutrition in the young, although the forms of protein prepared from it by the mother resulted in satisfactory nutrition.⁶

All experiments with animals tend to show that milk, eggs, cereals, and legumes, when fed in various combinations, produce the highest possible physical development, while attempts to base feeding merely on protein, fats, carbohydrates and caloric yield, *moves* in the wrong direction. The most scientific foods for infants, that is foods which will produce the best physical development, are readily prepared from milk, eggs, cereals and legumes through simple, easily-learned methods by which their chemical integrity is but slightly altered. The most scientific methods of taking these natural specialized foods apart and putting them together in attempts to improve on Nature may produce unscientific food, because an important, although small, element may be left out or put in wrong. Such methods of feeding have little to commend them.

The field for the physician as an infant feeder is broadening out and it will not require much effort for him to fit himself to occupy it. His greatest successes will come from avoiding attempts at solving feeding problems by intricate and profound chemical manipulations of the food, but rather by always being ready to utilize scientifically the biologic factor. This practically means an ability to select food of proper strength that will agree with the infant. The base of all feeding is the use of milk, eggs, cereals, and legumes and when the physician has become acquainted with the biologic principles of infancy and the properties of these food materials, he will have learned all that is necessary. He must then apply what he has learned to the individual infant. This is his problem and no one else can solve it for him in every case. The object of this paper is to show that the latest scientific studies in nutrition point favorably to great simplicity in the preparation of artificial food for infants if the biological side is properly emphasized. The principal ingredient, cow's milk, if scientifically produced and handled, may be simply diluted in right proportion to the age, keeping in mind that none of its ingredients—protein, fats or carbohydrates—must be long reduced below what is known to be their average content in human milk. The food elements entering into a complex fluid are not interchangeable at will in the scheme of nutrition. Too much manipulation, with supposed chemical or caloric requirements in mind, is apt to ignore the biologic or vital elements in the food that cannot be overlooked without danger. If a few underlying principles are conserved, the physician may employ any method that will give good results.

51 West Fifty-First Street.

5. Bull. 228, Wis. Agric. Exper. Station.

6. Osborne, Mendel and Ferry: The Role of Gliadin in Nutrition, Jour. Biol. Chem., 1912.

A CONSIDERATION OF SOME PRACTICAL BREAST-MILK PROBLEMS*

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In the^{*} crusade against high infant mortality so much has been said about the advantages of maternal nursing that there is coming into being a better understanding of its desirability and a general acceptance of the theory of its uniform superiority over substitute foods.

This is a long step forward; but in order to hold the ground which has been gained, the theory and the facts must be shown to be in harmony. In a statistical study of the situation there is no difficulty whatever in proving the advantages of maternal nursing or in convincing the most skeptical of its possibility in a very large percentage of cases.

But there are some very real difficulties which arise not infrequently in the course of breast-feeding in which both the mother and the child require more help than can be found in a study of statistics, interesting as these may be.

A great deal has been accomplished in the way of making maternal nursing more uniformly successful by calling attention to the importance of regularity in nursing habits and of proper intervals between feedings, and by placing proper emphasis on the necessity for rest, fresh air and proper exercise for the nursing mother. In the management of the secreting breast the importance of cheerfulness and serenity of mind has not been overlooked and the value of encouragement and confidence is generally admitted, for in no other organ is the connection between glandular activity and psychic states more easily recognizable.

It would be a misunderstanding and an injustice to charge with indifference or neglect all the mothers who give up at an early period the effort to nurse their babies. Many of them have tried faithfully, fully realizing its value to the average infant, and they may have called to their aid what medical advice was available. But they have been overcome by the obstinate logic of facts. The children did not do well.

No amount of imagination or psychotherapy can convince a mother that she is pursuing the best method of feeding when her baby is constantly uncomfortable and especially when the added testimony of the scales shows that ground is being lost instead of gained.

That the number of cases of this character is fairly large will be admitted by one who inquires carefully into the reasons which have led to the abandonment of maternal nursing in the feeding cases which present themselves in any large children's hospital or dispensary. A frequent story is this: "My milk did not agree with the baby after I got out of bed, and it soon left me"; or this: "I tried for two months to nurse the baby but he cried day and night and did not gain, so I gave it up." Many of these mothers have consulted physicians in the effort to make the milk agree with the baby and have done all that they and their medical advisers knew how to do before they gave up the fight.

The problem is a real one and by no means unimportant. No doubt many factors enter into it. No one theory will explain all the difficulties which arise.

* Read before the Section on Diseases of Children at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

But there is one influence which is so potent in many cases that it deserves more attention than it has recently received. I mean the diet of the nursing mother.

It has been a commonplace in text-books of pediatrics to find general directions for modifying the composition of the breast-milk. Milk and all fluids are to be taken to increase the total quantity, large amounts of food with little exercise to increase the proteins, and meat, eggs and animal broths to increase the fats. All this is good in its way. But beyond this point the text-books leave us in the dark, and in the cases to which I refer there may be no departure whatever from the normal in the chemical composition of the milk, as far as can be told by ordinary methods of analysis.

The effect of various foods on the milk of the cow is well recognized. In Denmark, for example, the leading dairy country of the world, the contract of one of the principal milk-handling companies requires that the cows shall not be allowed to eat beet-tops, beet trimmings, cabbage, distiller's slops, malt, etc., and for cows producing nursery-milk the following foods as well are prohibited: molasses, cotton-seed meal, green and dry buckwheat and mustard. If rape seed is used it must be shown not to contain any considerable quantity of oil of mustard. The effect on the odor and taste of milk of silage given just before milking and of too large rations of oil cake are well known to the average dairyman. The effect of brewer's and distiller's slops in causing diarrhea in those using the milk from cows thus fed is an old story.

And yet the minor changes in the human milk caused by variations in the diet have received but scant attention in recent years. This is due in part to the fact that these changes cannot be demonstrated chemically or microscopically, but only clinically, in part to the fact that the changes in the milk do not follow instantaneously on the changes in the diet, and thus at times the connection is overlooked, and in part to the fact that in many cases the tolerance of the digestive tract of the infant is sufficient to take care of the variations in the milk of the average mother, and so no discomfort results from a reasonably varied diet.

With the child who is comfortable this paper has nothing to do; only those concern us here whose breast-feeding is presenting difficulties.

These children are not comfortable, there is restlessness, particularly during the evening or at night, or there is marked discomfort after nursing which is not relieved by the eructation of a small amount of gas. At times the abdominal distress continues through almost the entire length of the interval between nursings, and is relieved temporarily by the taking of more food, to return twenty or thirty minutes later with renewed vigor. In spite of this distress the color and appearance of the stools may be satisfactory and the child may be gaining in weight.

Or, instead of satisfactory stools, various departures from the normal may be present, varying in degree from slight changes in color alone to severe diarrheal conditions. With the more marked disturbances, loss of weight is almost invariable.

In the early weeks of lactation the effect of continued restlessness on the part of the baby is very easy to trace both in the quantity and in the quality of the mother's milk. At this period the mother has regained her strength only in part, and unless she is

able to get an adequate amount of rest the milk-supply fails rapidly. If the child is continually in distress the mother usually has little opportunity to sleep and is constantly fatigued. Unless digestive comfort can be secured for the baby the supply of breast-milk may soon be entirely lost.

To indicate the character of the cases in which the diet of the nursing mother seems to be the disturbing element, a few illustrative cases will be cited.

CASE 1.—Boy, 3 months of age, always breast-fed at suitable intervals, has had green stools almost constantly since birth, now has five or six small green stools daily, containing some mucus, is very restless and uncomfortable, and rarely sleeps more than half an hour at a time night or day. Examination of the mother's milk showed nothing abnormal. During the past week attempts have been made to wean the child, but the cow's milk feedings have been vomited promptly. In spite of its digestive disturbance the baby weighs 1½ pounds more than at birth.

Inquiry into the mother's diet revealed the fact that she was on an abundant general diet containing generous amounts of fruit and vegetables to overcome a slight tendency to constipation.

When the fruit and vegetables were omitted, excepting starchy vegetables like potato and rice which cause no disturbance, the number of stools became normal and within a week their green color disappeared, and the child began to sleep three and a half or four hours at a stretch. No medicine was required. Nursing was carried on successfully up to the age of 12 months.

CASE 2.—Girl, 5 weeks of age, has a gonorrheal ophthalmia and vaginitis, and a superficial infection of the umbilical stump. Breast-fed entirely until a week ago but always had eight to twelve stools daily. For the past week has been given alternate feedings of breast-milk and of barley-water. Stools reduced in number to five or six daily, smooth and brownish, but baby is losing strength. Weight 6½ pounds, half a pound less than at birth. Child cries almost constantly, mother is worn out.

The feeding intervals had been reasonable and the mother had been on a moderately restricted diet as to vegetables but had been eating oranges, apples and jellies quite freely. When the fruit was omitted the diarrhea disappeared, comfort was restored and the child began to gain in weight. A nurse was secured to enable the mother to get a sufficient amount of rest. No medicine was needed.

CASE 3.—Boy, 3 months of age, always breast-fed. Bowels move only once or twice daily, but stools are always greenish and undigested in appearance. The baby is very uncomfortable most of the time and is particularly troublesome at night. In spite of the constant restlessness the child's nutrition is good and there has been a moderate but steady gain in weight.

TL: breast-milk has been examined and found normal, but the mother is nearly worn out by the continued loss of sleep, and the amount of milk appears to be diminishing rapidly.

Inquiry into the nursing habits showed that the breast-feeding had been intelligently directed. Numerous attempts had been made to bring digestive comfort to the child but all had failed.

On going into the subject of the mother's diet it was found that in the main she was eating very sensibly, but that she was taking oranges and cooked apples every day. When these were omitted the character of the stools became normal, the baby began to rest well, the mother was able to secure sufficient rest and her supply of milk increased promptly. Instead of finding it necessary to wean the child she was able to nurse it up to the age of 10 months.

These cases are fairly typical and it is needless to continue their recital; in all of them the aid of medical men had been sought, in all of them weaning had been considered the only solution of the difficulty, in all of them regulation of the mother's diet was all that was required.

It seems possible that some of the aromatic bodies which give flavor and odor to food substances pass over into the human milk just as they do into cow's milk. Certain it is that the foods which seem to give rise to the greatest amount of disturbance during the early weeks of lactation are those which contain the aromatic bodies in the largest amounts, such as fruits, vegetables of the more highly flavored sorts, and spices. These aromatic bodies are not destroyed by boiling, so that they are present in cooked as well as raw fruits, and in such articles of diet as jellies, preserves, marmalades, wines, etc., they are found in a considerable degree of concentration.

Whatever the nature of the irritating substances contained in the milk, there is manifestly a great variation in the sensitiveness to them displayed by the digestive tracts of different babies, or even by the digestive tract of the same baby at different ages. Many babies seem to be serene and happy under all conditions, no matter what the mother eats; other babies are restless and disturbed during the early weeks or months of life by food substances in the mother's diet which causes no such reaction at a somewhat later period.

It has seemed to me that the best method of approaching these cases is to begin by forbidding entirely to the nursing mother the use of fruits, fruit derivatives, spices, and highly flavored vegetables at the beginning of lactation or when digestive disturbances are manifested, withholding them until a norm has been established, departures from which may be recognized readily, or until digestive comfort has been restored.

An ample and varied dietary can be provided from fresh meat, fish, eggs, potato, rice, macaroni, cereals, milk, cream, butter, bread in various forms, and starchy substances, like corn-starch, tapioca, sago, etc., and from these there is very little possibility of harm.

In order to avoid the danger of disturbing lactation before it is well established and before the mother has regained her strength to a reasonable degree, it has seemed to me desirable to have an extremely bland diet of this character continued until the end of the first month. After this time additions to the diet in the shape of vegetables and fruit may be tried cautiously, not more than one new thing being tried in any one day to avoid confusion in interpreting the results, and not striving for too great a variety in order to avoid exceeding the gradually increasing tolerance of the infant's digestive tract.

Least I be suspected of claiming originality for these ideas let me add that among the earliest writings on pediatrics which have come down to us from Greek medicine are instructions as to the diet of the nursing mother. Paul of Aegina quotes from Oribasius, who lived from 326 to 403 A. D., the following directions:

She ought to avoid everything of a very desiccative nature, and likewise such as are saltish, sour, acid, bitter, very heating, or of offensive smell; also, such as are strongly fragrant, condiments, and such like acrid substances.

To-day the pendulum has swung in the opposite direction and it has become the fashion to say that restriction is unnecessary and that the mother's diet has very little effect on the digestibility of her milk, except in a general way.

It seems to me that we have gone too far in removing our restrictions and that in this matter we can well afford to listen to Oribasius, Aristotle, and Hippocrates.

THE FEEDING OF SKIMMED BREAST-MILK*

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The problem of digestive and nutritional disturbances in the breast-fed is ever with us, and should be met scientifically before resorting to complete artificial feeding. High fat content of the milk, intolerance of the infant for fat, nervous disturbances in the mother, inherited feeble digestive powers of the infant and other causes must be considered. Examination of the stools will often furnish evidence of the nature of the intolerance, and when the fat is at fault a reduction in the amount ingested may permit the continuance of breast-feeding and be only temporarily necessary.

It seems conservative to say that a fat-reduced breast-milk will be as easily digested, when a reduction is necessary, as is fat-reduced cow's milk or any artificial food. Efforts to increase the digestibility of breast-milk through attention to the mother's health are often unsuccessful. Regulation of the length of nursing, giving a known quantity of milk by weighing the infant before and after nursing, lengthening the intervals, diluting the drawn milk—all may be tried. When these are done, we still have many infants that are unsuccessfully fed. Simple dilution of the milk reduces all the percentages, but in skim milk there remains the original amount of sugar, salts and protein. None of these causes disturbances in the breast-fed with the possible exception of great variations in the sugar.¹

INDICATIONS FOR THE USE OF A FAT-REDUCED BREAST-MILK

Cowie² has demonstrated that high fat food tends to slow stomach evacuation, because the duodenal closing reflex is stimulated when fat is present in the duodenum.

Morse³ believes that in the treatment of pyloric spasm, the best food is good breast-milk, and if this is vomited, it is well to remove a part of the fat so as to keep its percentage low and thereby hasten the emptying of the stomach.

The value of stomach washing in pylorospasm cannot be denied, but an adjuvant is found in the reduction of the fat in the food. Persistent vomiting in which there is no constant or intermittent obstruction at the pylorus gives also a like indication. Rott⁴ believes that certain cases of vomiting which consist of a gastric neurosis are caused by a fat-rich breast-milk, and are cured by administering the opposite.

Towle and Talbot⁵ came to the conclusion that the indigestion of fats and carbohydrates as found in the stools occur with some regularity in association with infantile eczema. In the exudative diatheses an intolerance exists for fat.

Infantile eczema occurs more often probably in the breast-fed. It is often found in the overfed child. A reduction in the amount of fat ingested is indicated.

* Read before the Section on Diseases of Children at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Lust (Monatsschr. f. Kinderh., 1912, xi, 226) shows that high percentage of sugar can in some instances be the cause of acid formation in the intestine and therefrom give occasion to diarrhea. When the sugar is low, an inhibiting influence on intestinal peristalsis can be occasioned.

2. Cowie: Am. Jour. Dis. Child., March, 1913, p. 233.

3. Morse: Am. Jour. Dis. Child., May, 1911, p. 366.

4. Rott: Vortr. Ver. f. inn. Med. u. Kinderheilk., Berlin, May 29, 1911.

5. Towle and Talbot: Am. Jour. Dis. Child., October, 1912, p. 219.

Too great a fat content in breast-milk can cause digestive disturbances, especially in the premature.⁶

Finklestein and Meyer⁷ have shown that the nutrition of breast infants can suffer from the fat of human milk, if a severe enough injury has been done to the intestine.

Nothmann⁸ advises the use of less rich milk in the premature infants with weak digestions.

Ritter⁹ reports a series of cases in which intestinal injury occurred through the feeding of fat-rich breast-milk, and repair was brought about through the use of fat-poor milk.

Langstein,¹⁰ in the study of eighty-eight infants suffering from disturbances of nutrition, found that the restoration of the child was often completed in a shorter time by the use of breast-milk from which the fat was removed.

During the past year I have been trying to determine the value of fat-reduced breast-milk as a food in congenital weaklings and in infants who show intolerant symptoms after nursing. If it were possible to change the composition of the milk so that digestion would be rendered comfortable, the child might soon increase its tolerance for larger quantities of whole milk and thus continue to be nursed at the breast. In not all cases was the experiment successful. In some the child was lost sight of or it was impossible to secure enough breast-milk. Some distinctly successful cases warrant their report in brief.

CASE 1.—Baby F., born at 8 months, birth weight 5 pounds. At the age of 3 weeks child began to vomit and to have numerous loose undigested stools. The length of breast-nursing was cut to a few minutes and a definite amount of breast-milk given. Whenever nursing over five minutes, the stools increased to six to eight daily. Had much pain from distention. At the age of 10 weeks the weight was 6 pounds. A wet-nurse was secured and her milk drawn and skimmed. Beginning with 1½ ounces of skimmed milk supplemental to the three-minute nursing of the mother, the stools reduced in number from three to five daily, sleep became normal, weight gained. Child was uncomfortable when on an entire feeding of whole milk. At the end of fourteenth week, weight was 7 pounds and 9 ounces. At the end of fourth month weighed 9 pounds, and has since gained normally.

CASE 2.—Baby N., full-term child, had been taken from the breast because of evidences of indigestion and failure to gain. Artificial food, a condensed milk, had been resorted to with no improvement in the condition. A wet-nurse was secured at my suggestion, with a continuance of the dyspeptic symptoms. The amount of breast-milk was reduced definitely to the minimum necessary for a sustaining diet. The colic and crying did not abate. As much drawn milk as could be secured was skimmed and given as supplemental or exclusive feedings with increased comfort to the child and a gain in weight permitting a complete return to whole milk within a few weeks.

CASE 3.—Baby E., aged 3 months. Had been exclusively on mother's milk since birth with exception of the recent supplemental use of a proprietary food. Vomiting of most of the food, much colic, but stools were said to have been apparently normal, no gain over birth-weight, which was 4 kg. Child markedly atrophic. The possibility of pyloric obstruction was disproved by the administering of a barium chlorid meal, under fluoroscopic and roentgenographic observation, there being no delay in the emptying-time of the stomach. Stomach-washing brought no considerable residue. A wet-nurse's milk was substituted for a part of the mother's

nursings with no improvement, reduced in amount to 1-ounce nursings at three-hour intervals. The wet-nurse's milk, skimmed, was then administered at the beginning in 1-ounce doses, supplemental to the known amount of mother's milk. No gain in weight during the time the child was under my observation, two weeks. Vomiting promptly ceased, the child's comfort and sleep practically normal.

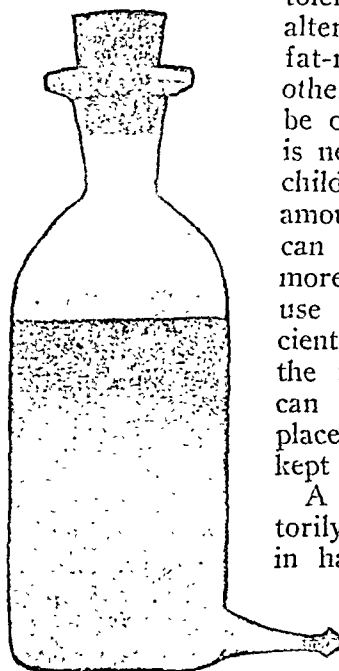
CASE 4.—Baby H., aged 2 months, breast-fed, mother in good health and had successfully nursed two other children. Constant vomiting with pylorospasm and daily convulsions. Lavage and regulation of the amount ingested brought relief from vomiting but no gain in weight. Supplemental feedings of skimmed breast-milk from the mother and wet-nurse were given, at first in small amounts and later in as large as the infant could tolerate. Uneventful recovery.

METHODS OF OBTAINING BREAST-MILK

An effort is made to withdraw a part or all of the twenty-four-hour milk from the mother. Allowing the infant to nurse a few minutes each time and then supplementing it with the necessary ounces of breast-milk, previously drawn and skimmed, will keep the breasts active and in some instances will be found to be

tolerated well by the child. Or alternate nursings and feeding of fat-reduced milk may be used. In other cases all the feedings will be of skimmed milk, as long as is needed for the welfare of the child and while the necessary amount is available. Many women can express the milk by massage more satisfactorily than by the use of the pump. When sufficient milk is not obtainable from the mother, a wet-nurse's milk can be obtained. The milk is placed in a covered receptacle and kept on ice.

A detail that works satisfactorily is the storage of the milk in half-pint or larger tubulated bottles which have been made in an 8-ounce size for me by Whitall, Tatum and John M. Maris. A rubber stopper closes the mouth of the bottle, and another one the small



Eight-ounce tubulated bottle used for separating the breast-milk from the cream.

opening at the bottom. This bottle is a duplicate of the nasal douche bottle listed in the catalogs. All of the milk up to the cream line can be withdrawn without mixing the cream. With a little experience rich or poor milk can be told at a glance by the depth of the cream-line in this bottle.

I have examined numerous specimens of breast-milk to determine how much fat is removed by this method. The average fat-content of skimmed breast-milk was determined by the Lewi modification of the Babcock test:

Average content of specimens before skimming, 3.1 per cent.

Fat content at the end of four hours, 1.8 per cent.

Fat content at the end of eight hours, 1.5 per cent.

Fat content at the end of twenty-four hours, 0.9 per cent.

In the specimens from which the foregoing averages were taken:

From 1 to 1.7 per cent. fat was removed at four hours.

From 1.5 to 2.7 per cent. fat was removed at eight hours.

From 2.0 to 3.0 per cent. fat was removed at twenty-four hours.

6. Planchaud and Rendu: *Arch. de méd. d. enf.*, 1911, xiv, 582.

7. Finklestein and Meyer: *Jahrb. f. Kinderh.*, 1910, lxxi, 525.

8. Nothmann, H.: *Ztschr. f. Kinderh.*, 1913, vi, 578.

9. Ritter: *Vortr. Deutsch. Gesellsch. f. Kinderh.*, Wien, 1913,

ix, 20.

10. Langstein: *Vortr. der Berlin. med. Gesellsch.*, 1911, xi.

Breast-milk stays sweet on ice much longer than cow's milk, and even during the summer months has been perfectly good as long as three days.

CONCLUSIONS

1. There are certain cases in which the temporary feeding of skimmed breast-milk is advisable until the digestive difficulties of the infant are over and a return to whole breast-milk is possible.

2. This method of feeding is worthy of trial in the great class of infants with intestinal indigestion as manifested by abdominal distention, colic, fretfulness, loose, green dyspeptic stools, failure to gain in weight through several weeks; in babies that have gastric and pyloric symptoms; in the eczema of infancy, and in the congenitally weak and premature infants.

3. Skimmed breast-milk is a safe and digestible food, and is applicable whenever a fat-free milk is indicated.

4. Human milk permits of simple cream separation and can usually be obtained for this purpose from the mother or wet-nurse.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. MYERS AND NEFF

DR. JOHN ZAHORSKY, St. Louis: If there is one thing we need it is a simple method of treating or preventing the severe dyspepsia that some infants have in the first few days or weeks of life. Little that is definite is found in the literature and I believe we should more and more study these cases. I was surprised to hear Dr. Myers say that the effects of fruits were so bad. Oranges and apples and other fruits have been permitted to nursing mothers, yet, from his observations, these things are not tolerated. Modern writers do not exclude fruit from the mother's diet. Some of the older writers are substantiated by our observations of to-day. We know that these dyspepsias often disappear spontaneously. I recall one baby who had severe attacks of acid dyspepsia, with severe pain, loss in weight and fever. The baby was put on rice-water each time, gradually going back to the breast. The symptoms slowly disappeared. What we want to know is what caused the acid dyspepsia. After all, we know very little about breast-fed babies. As soon as we do know we will be able to keep mothers nursing their babies. The mothers are not unwilling, but when the poor mother who has been up night after night with a screaming baby finds it is not thriving, she will not keep the baby on the breast. No matter how much you may encourage her, she will not nurse it under these circumstances.

DR. CHARLES DOUGLAS, Detroit: For many years I have been opposed to fruits in the diet of nursing mothers, and general practitioners have opposed and laughed at me, because they said fruits did no harm. These papers I think should be of great force to general practitioners. Unfortunately, the profession has learned to give everything to the nursing mother. It is a well-known fact that those who deal in animals, breeding stock, etc., know more about the nutrition of the young animals that they raise to sell than the human family knows about their own offspring. It is a shame to own it but it is true. I have commented on it for many years. Dr. Myers classifies the fruit foods which should be objected to. He gives as a reason "high flavor." I think he should have gone further. It is not the high flavor alone; it is the sugar. Fruits are composed almost entirely of sugars and acids. Must we exclude sugar or flavors from the milk? I believe it is the sugar. I have seen instances in which mothers have indulged in sweet things to excess and have ruined their children's digestion. The children would immediately improve when the mothers

abstained from sweets. I would prohibit sugar in the various drinks which are given to children. To have a baby's digestive organs ruined by an ignorant woman is an everyday occurrence. Some of our trained nurses also are guilty, I am sorry to say. They give the child something sweet because it likes it, and they lay up trouble right from the first twenty-four hours. I think physicians should take as much interest in the child as in the mother. At each visit they inquire particularly into the health of the mother but give little attention to the child. If the physician would always lay down a rule in the beginning to prevent the nurse feeding sweets to the child, we would have less of those troubles.

DR. HARRY LOWENBURG, Philadelphia: Last year I read a paper dealing with this subject, "The Etiology of Artificial Feeding," in which I discussed some of the causes leading to discontinuance of breast-feeding, and I believe this study will lead us to handle these cases more intelligently. Physicians are very quick to discontinue breast-feeding when these symptoms appear, because they are at a loss how to meet them. In the treatment of green stools, and of vomiting, which is not organic but dependent on some food mixture which the child receives, I believe the study of the mother's diet is important. Dr. Neff's suggestion that some of these cases will do well on skimmed milk is also important. If this knowledge could be spread broadcast to the general practitioner, I think more children could be kept on the breast and infant mortality would be lessened.

DR. JOHN LOVETT MORSE, Boston: We all believe that human milk is the best food for the baby. We have been inclined for that reason to conclude that human milk was the best food for the baby under all conditions. That is not always true. We have to remember that human milk contains fat, milk sugar and protein. When we have poor fat tolerance, or when we have bad milk-sugar tolerance, the fat and sugar in human milk will disagree in almost the same way as the fat and sugar in cow's milk would disagree. I say almost, because they do not disagree to the same extent. The baby will often be able to assimilate human milk when it could not assimilate cow's milk of the same composition. It is in the cases in which skimmed milk is useful, that straight breast-milk does not agree. Skimmed breast-milk may be used in these cases and will often be tolerated when skimmed cow's-milk is not. I think there is no question that fruit and highly flavored foods in the mother's diet cause a disturbance in the baby's digestion, but I believe that it is the exception and not the rule, and that the majority of healthy nursing mothers can eat almost everything. If the baby is disturbed, we must find out what article of food is the cause. When the baby is crying, having green stools, etc., the trouble in the breast-milk is usually not so much due to the diet of the mother as to anxiety and fatigue, which increase the amount of protein in the milk. I believe a great deal can be done, not by changing the mother's diet, but by regulating her habits and life and by reassuring her if she is nervous. I feel confident that there are practically no data to prove that any ordinary increase in the amount of sugar in a woman's diet will have any influence on the amount of sugar in her milk. It must be extreme in amount to have any effect.

DR. A. W. MYERS, Milwaukee: Among the substances which influence the taste and odor of foods are certain phenol derivatives which are largely responsible for the flavoring in the more highly flavored foods. What rôle they play in the body is not exactly clear. In the ordinary process of metabolism, these phenol bodies are apt to be combined with the glucose of the blood and eliminated in the urine in the form of phenylglucuronic acid. During lactation a new outlet for the blood-sugar is provided and it is possible that some of the phenol bodies may enter the milk in combination with the sugar.

It is remarkable how large a gap there is in our knowledge of the composition of human milk. Meigs and Marsh have recently shown that there are unknown substances in human milk amounting to about 1 per cent., approximately equal to the percentage of lactalbumin.

As Dr. Mörse has truly said, undoubtedly these cases to which I have attempted to call your attention are the exception rather than the rule. I stated that when a baby was doing well on the breast, the ideas expressed in the paper did not apply; they apply only to the baby who is not doing well. I think there are more babies who have than who have not a digestive tolerance sufficient to take care of the normal variation in the mother's diet. Fatigue and worry have a distinct effect. I attempted to call attention to this effect of anxiety and fatigue, which increases the digestive disorders at this period. With regard to the effect of sugar in the mother's diet, it seems to me the effect is indirect. Sugar ingested by the mother may disturb her digestion and in that way indirectly disturb the infant's digestion.

SOME PRESENT-DAY PROBLEMS IN THE SURGERY OF GASTRIC AND DUODENAL ULCER*

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When your officers paid me the great compliment of asking me to submit a paper to the Section on Surgery, I felt that if I were to accept I must present a contribution which would be of practical value and would stimulate some discussion.

The life of a surgeon attached to a large hospital presents few opportunities for purely experimental research, and his observations are to a large extent confined to the clinical side of surgery. It has been my great good fortune to be closely associated with Sir Berkeley Moynihan for a number of years in both his private and hospital practice, and my interest in the surgery of the stomach and duodenum has naturally been greatly stimulated and by his kindness I have been offered numerous opportunities.

Sir Berkeley Moynihan in my country and Drs. William and Charles Mayo in your own have said almost all that is to be said with respect to the treatment of chronic duodenal and pyloric ulceration, but there are still certain complications and varieties of ulcer concerning the treatment of which surgical opinion is not yet crystallized, and it is with these that I wish to deal. I cannot pretend that what I have to say is in any sense final or that from the material at my command I can draw absolutely definite conclusions, but I will endeavor to indicate in what direction I imagine the road lies to a satisfactory solution of the problems.

I wish first to consider the condition of acute perforation of a duodenal or gastric ulcer. During the last year or two much has been written on this subject and I can present nothing new to you with regard to the diagnosis. I wish to lay stress however, on the following points.

Perforation of a gastric or duodenal ulcer is, with the exception of appendicitis, the most frequent acute abdominal lesion.

It is a condition in which the mortality is directly proportionate to the number of hours which have elapsed between the perforation and operative relief. This is well illustrated by my own cases. Up to the present date I have been called on to operate in 53 cases of acute perforation of a gastric or duodenal ulcer; of these 40 were duodenal and 13 gastric. Of the 40 cases of duodenal perforation, 27 patients

recovered and 13 died; of the 13 gastric ulcers 6 patients recovered and 7 died. Out of the 53 cases 24 patients were operated on within twelve hours of perforation, with 21 recoveries and 3 deaths, a mortality-rate of 12.5 per cent.; of these three patients one, who was an alcoholic, died of acute pneumonia and another died on the eighth day quite suddenly and from no ascertainable cause, the peritoneal cavity being quite clear. Of the remaining 29 patients operated on at various periods after the first twelve hours had elapsed, 12 recovered and 17 died, a mortality-rate of over 58 per cent.; a further investigation shows that in the cases of over twenty-four hours' duration, the mortality is close on 80 per cent., so that in reality the seriousness of the prognosis increases by leaps and bounds as every hour elapses. This fact has been frequently insisted on and is well borne out by the collective report of 200 cases of perforated duodenal ulcer, published by a number of Edinburgh surgeons in the *Edinburgh Medical Journal* of last year.

The imperative necessity for early operative interference makes it essential that the symptoms of perforation should be realized by the practitioner who first sees the case, for on his prompt diagnosis the fate of the patient depends.

That diagnosis is becoming more accurate is evidenced by my own cases, for of the last 13 patients, 12 were operated on within twelve hours and all but one of these recovered.

I would emphasize the importance of the following points in diagnosis:

1. The sudden onset of violent pain in the upper zone of the abdomen.
2. The short duration of symptoms of shock or collapse.
3. The board-like rigidity of the abdominal muscles, particularly above the level of the umbilicus; this rigidity is, in my experience, more marked than in any other acute abdominal condition and in itself is almost sufficient to justify the diagnosis.

Diminution of liver dulness and signs of free fluid are later in their appearance and should not be considered as in any sense necessary for diagnosis; it should be our endeavor to make a decision before they are manifest.

It is not my intention to consider differential diagnosis, for this has frequently been discussed, so I will at once proceed to the consideration of some points in the operative technic.

As soon as operation is decided on, it is my practice to give a hypodermic injection of $\frac{1}{4}$ grain of morphin. By this means the amount of anesthetic necessary to abolish the rigidity of the abdominal muscles is materially diminished and postoperative restlessness overcome.

I am a firm believer in the Fowler position, notwithstanding the fact that recent investigations appear to show that the physiologic reasons urged for its adoption were fallacious; clinical experience, I am convinced, justifies us in retaining it.

We have all patients in whom a perforation is suspected propped up in bed at once and conveyed to the operating-theater in this position. The operating-table is tilted, so that the patient's thorax is considerably higher than his pelvis, and afterward he is returned to bed in the same manner.

The abdomen is opened through the right rectus muscle and the existence of a perforation is deter-

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

mined by the presence of free gas or the characteristic effusion. Gauze packs are passed into the right kidney pouch and downward to the umbilical region, and then the position of the perforation is determined.

In perforated duodenal ulcer I am usually content to close the opening by three sutures of Pagenstecher thread of the Lembert type by which the perforation is infolded. These I endeavor to place at right angles to the long axis of the intestine in order to prevent stenosis; in large perforations I have frequently taken two or more sutures through all the coats of the bowel to close the gap and then infolded these by a second layer. Exceptionally I have excised the perforation by an elliptical incision in the long axis of the bowel and closed it by two layers of suture in the opposite direction. The treatment to be adopted must necessarily vary according to the condition found. In many small perforations with little surrounding infiltration, infolding sutures are simply applied and are quite effective; but in the larger perforations with much induration, more elaborate procedures may be necessary.

The foregoing remarks apply equally to ulcer of the body of the stomach, although in such cases more extensive infolding is possible than in the case of pyloric and duodenal ulcers.

After the perforation is closed I spend a moment or two in cleansing the subphrenic and subhepatic spaces; the semi-upright position materially assists in this, and the exudate is carefully swabbed out with gauze mops saturated with warm saline solution. No further attempt is made to cleanse the peritoneal cavity, but a stab incision is made above the pubes, a large split rubber tube inserted through it to the bottom of the pelvis and the upper wound closed without drainage. The patient is returned to bed in the Fowler position and continuous proctoclysis begun.

This is the operative technic which experience has shown me to be the most satisfactory, and I believe that it differs hardly at all from that of most other surgeons who have had to deal with many of these cases. There is one question, however, on which there appears to be a considerable difference of opinion, and that is whether or not a gastro-enterostomy should be performed at the time the perforation is closed. Sir Berkeley Moynihan, in 1901, was, I believe, the first to advocate the occasional performance of a primary gastro-enterostomy, but his views have been somewhat misrepresented on more than one occasion. Since that time widely divergent opinions have been expressed by many authorities, and the arguments for and against a routine gastro-enterostomy have been admirably set forth by Elsworth Eliot.¹ With his conclusions I entirely agree.

The question may be considered from two points of view.

1. Is a gastro-enterostomy necessary or advisable for the immediate recovery of the patient?
2. Is it advisable in order to obviate future trouble provided he recovers from the perforation?

The first proposition that a gastro-enterostomy should be performed in all cases as a routine procedure because it materially assists the immediate recovery of the patient is, I am convinced, a dangerous view to hold. If this course were universally adopted I am quite sure that it would result in a large increase in mortality. The arguments advanced for routine gastro-enterostomy are that more secure closure of the

perforation can be attained, that there is less risk of leakage, hemorrhage and subsequent perforation, and that feeding and purgation of the patient are simplified. While I am prepared to admit that in certain instances, such as perforation of an ulcer at the isthmus of an hour-glass stomach or of a very indurated ulcer of the pylorus where closure produces almost complete stenosis, a gastro-enterostomy is imperative whatever the condition of the patient may be, I am strongly of opinion that in practically every case of ulcer of the body of the stomach and the vast majority of pyloric and duodenal ulcers, a gastro-enterostomy is unnecessary for the immediate recovery of the patient and that its performance as a routine is unsound.

In the series of cases collected by Elsworth Eliot and by the Edinburgh surgeons I have already mentioned, there was no evidence to show that in a single case its omission was responsible for a fatal result. My personal experience is identical. Among the twenty fatal cases in my series there is only one in which there was evidence of leakage after suture, and this was a case in which a very large indurated ulcer on the lesser curvature showed a perforation the size of a shilling. The only method by which secure closure could have been attained would have been by excision of the ulcerated area, and the grave condition, of the patient made this impossible. The fact which has impressed me more and more as my experience has accumulated has been that an infolding of the pylorus or duodenum which at the time appears to produce a considerable grade of stenosis subsequently gives rise to no symptoms of obstruction. I have on only two occasions had to operate within a short time, that is to say a couple of months, for obstruction at the pylorus. So far as I can judge, the immediate convalescence of the patients with and without a gastro-enterostomy differs little or not at all.

Let us now consider the second proposition, that an immediate gastro-enterostomy is advisable in order to prevent further trouble and a persistence or recurrence of ulceration. My own experience may be summarized as follows:

Out of 33 cases of perforated ulcer with recovery, 28 were ulcers at the pylorus or in the duodenum; of these 13 were treated by suture alone or excision and suture and 15 by suture and primary gastro-enterostomy. Three of the cases of suture and 1 case of gastro-enterostomy are too recent to be of value. Of the remaining 10 treated by suture I have been able to trace 9; of these, 4 patients are perfectly well with no symptoms of recurrence and of the other 5, 1 has symptoms of persistent ulceration and 4 have had a secondary gastro-enterostomy. The conditions found in these 4 patients are of interest; in 1 case operation was performed within a month for stenosis, but in the other 3 there was at the time of the secondary operation no evidence of either active ulceration or actual stenosis, the symptoms apparently being due to adhesions about the pylorus and duodenum. All these four patients are now in good health.

Of the 14 cases treated by a primary gastro-enterostomy I have traced 11. Of these 9 are quite well, 1 has since died of carcinoma of the esophagus and another has pain and vomiting after food. Three days before I left home I operated on this man and excised a large gastrojejunal ulcer which had occurred at the anastomosis. My colleagues on the staff of the Leeds Infirmary have kindly allowed me to inquire

1. Eliot, Elsworth: *Ann. Surg.*, 1912.

similarly into the late results of their cases, but I have been unable to trace a considerable percentage of the patients; I will give the results, however, for what they are worth. Of 26 cases of pyloric and duodenal ulcer treated by suture or excision and suture, I have traced 17; of these 13 patients appear to be quite well and 4 have had a recurrence of symptoms. In 2 of these a secondary gastro-enterostomy has been performed. Among the 9 cases which I am unable to trace, it is probable that there are some with a recurrence of trouble.

Of 22 cases in which a primary gastro-enterostomy was performed I have been able to trace 16, of these 10 patients are quite well and 6 still have some digestive trouble. Combining the results of my own and my colleagues' cases therefore we have 26 cases treated by excision or suture in which the subsequent history is known; of these 17, or 65 per cent., are quite well, and 9, or 35 per cent., have had a recurrence of symptoms; in 6 of these a secondary gastro-enterostomy has been performed with a satisfactory result. Of the 27 cases of primary gastro-enterostomy, 19 patients, or 70 per cent., are well, 1 is dead from another cause and 7 still have digestive trouble.

Among the cases of perforated duodenal ulcer in which a primary gastro-enterostomy was not performed are 9 cases in which one of my colleagues, Mr. Dobson, excised the ulcer very freely and then sutured the wound transversely to the axis of the intestine, performing a plastic operation much on the same lines as that described by Dr. W. J. Mayo. Of these patients 7 have been traced, and of these only 2 have any symptoms of indigestion. It may be that an operation of this type or a Finney pyloroplasty is more likely to confer immunity from recurrence than a mere infolding of the perforation.

With regard to perforated ulcers of the lesser curvature and body of the stomach, I find that my colleagues and myself have had during the same period 49 cases with 20 recoveries. Of the latter I have been able to trace 13. All were treated by suture or excision of the perforation and in no case was a gastro-enterostomy performed. Of the 13 patients 10 are quite well and in 3 there has been a recurrence of symptoms; one of these was a patient of my own in whose case I subsequently did a gastropasty for hour-glass stomach. The patient still has some trouble but is much better.

The number of cases, reports of which I have been able to collect, is perhaps too small to draw any definite conclusions, and the time which has elapsed since operation in some of them is too short to eliminate the possibility of a recurrence of symptoms; but the results of my investigations I believe justify one in drawing the following conclusions:

In cases of ulcer of the lesser curvature or body of the stomach, closure of the perforation and infolding is followed by cure of the condition in a large proportion, possibly 75 per cent. of the cases, and a primary gastro-enterostomy is unnecessary.

In cases of pyloric or duodenal ulcer a considerable number of the patients, probably about 40 per cent., will suffer from a recurrence of symptoms if the perforation is merely closed, but these symptoms seem in a proportion of the cases to be due to adhesions and not to stenosis or recurrent ulceration. This estimate of the frequency of recurrence is less than that of my friend Mr. Corner.

Judging from my own cases with which I have kept closely in touch, there is no doubt whatever that the patients in whom a primary gastro-enterostomy has been performed present more satisfactory late results than those in whom the perforation has just been closed, and it will be noticed that among the recovered cases the former are more numerous than the latter. This is explained by the fact that I have performed a gastro-enterostomy only in those cases in which the perforation was recent and the patient in good condition.

I would briefly summarize as follows:

1. There is no evidence that the performance of a primary gastro-enterostomy is necessary for the recovery of the patient.

2. In cases in which the grade of peritonitis is severe as evidenced by semipurulent effusion, injection of the visceral peritoneum and symptoms of toxemia, a primary gastro-enterostomy should not be performed except in the very rare cases in which closure of the perforation causes an almost complete stenosis.

3. The surgeon who is familiar with the operation is justified, and I think, is well advised to perform a gastro-enterostomy in cases of pyloric or duodenal ulcer in which the perforation is recent and the patient in good condition. In ulcers of the body of the stomach a gastro-enterostomy is best omitted.

4. The surgeon who is not experienced in gastric surgery had better be content with closing the perforation.

5. Both to those who are experienced and those who are not I would make the following suggestion: "When in doubt, don't."

I wish now to draw your attention to a type of ulcer the treatment of which presents one of the most perplexing problems in gastric surgery. I refer to the chronic ulcer of the lesser curvature of the stomach. There is probably no operation which produces more gratifying results than gastro-enterostomy for chronic ulcer of the duodenum and pylorus, but there appears to be no doubt that similar results are not forthcoming in many cases of chronic ulcer of the body of the stomach for which a similar operation has been performed.

In endeavoring to find an explanation for this, one is confronted with the question, "In what manner does a gastro-enterostomy produce healing of an active ulcer at the pylorus or in the duodenum?" Some authorities maintain that the beneficial result is the consequence solely of more rapid evacuation of the stomach and diversion of the contents through the new opening. Others, Paterson particularly, maintain that the effect of the operation is purely physiologic and is dependent on an alteration in the gastric secretion mainly in the direction of the reduction of the total acidity. Possibly the truth lies somewhere between the two theories, but I believe that modification of the gastric secretion plays a not unimportant part. Paterson, in support of his view, states that in his own experience the results of gastro-enterostomy for ulcers of the body of the stomach have been almost universally successful and quite as good as in ulcers situated at the pylorus or in the duodenum. In this I believe he is at variance with other surgeons who have had extensive experience. Mayo and Moynihan long ago recognized that many cases were unrelieved by the short-circuiting operation, and were pioneers in the treatment of ulcers of the lesser curvature by a wedge excision and those of the posterior surface by the transgastric route.

In considering the operation of excision the first question one asks oneself is, Why should not ulceration recur either at the line of the incision or in another part of the stomach, seeing that it is probable that the conditions which gave rise to the ulceration in the first instance still persist? That such recurrent ulceration does not infrequently take place I shall endeavor to show.

Mayo, in a review of 1,000 cases of ulcer of the stomach and duodenum, gives one to understand that the results of excision alone have been disappointing and the results which I will put before you leave much to be desired.

By the kindness of my colleagues I have been able to investigate the end-results in a considerable number of cases of ulcer of the body of the stomach treated in various ways; the larger number of the cases occurred in the practice of Sir Berkeley Moynihan, and to him and my other colleagues of the Leeds Infirmary I wish to express my indebtedness. I have arranged the cases in the following groups:

1. Cases treated by excision alone.
2. By gastro-enterostomy.
3. By excision and gastro-enterostomy.
4. By other methods such as partial gastrectomy.

Cases of chronic ulcer on the lesser curvature or posterior surface of the stomach treated by wedge excision or transgastric excision.

Of these I have been able to collect 39, and 33 of them have been traced. Of the 33 patients 12, or 36 per cent., are quite well at periods varying from two to five years. Four patients are improved but not free from trouble, there was 1 operative death, and 1 patient died six months after operation with no improvement. In the remaining 15 cases, or 45 per cent., there has been a recurrence of symptoms. It is worth while to consider some of these cases in detail.

In 10 of the cases symptoms recurred within twelve months of the excision and necessitated further operation. Two of these patients were operated on for acute perforation of a recurrent ulcer at the site of the previous excision, and both patients died. One of them I operated on myself. The history is briefly as follows:

J. D. S., man, aged 40, admitted November, 1911, under one of my colleagues, with symptoms of gastric ulceration. At the operation a large chronic ulcer was found on the posterior surface of the stomach involving the lesser curvature about two-thirds of the distance from pylorus to cardia. This was excised by the transgastric method and the gap in the stomach closed. He was well for about six months and then had a recurrence of indigestion with occasional vomiting. The symptoms became worse and early in 1913 he had several attacks of hematemesis. In March he was admitted obviously very ill and much blanched. Hematemesis recurred and four days after admission he was suddenly seized with acute abdominal pain and all the symptoms of perforation. I saw him within an hour and operated immediately. I found a large indurated ulcer on the lesser curvature and posterior surface of the stomach, adherent to the upper border of the pancreas; there was a perforation the size of a pea at its upper margin and extensive peritoneal extravasation. The perforation was closed, but the patient died twenty-four hours later. Post mortem, it was found that the old anterior incision in the stomach was soundly healed, but that at the site of the posterior wound there was a large indurated recurrent ulcer which had perforated. Between this ulcer and the pylorus on the posterior stomach wall there was a second acute ulcer the size of a shilling.

In the second case of acute perforation operation was performed by my colleague, Mr. Dobson, and with

several other cases was reported by him in a paper read before the British Medical Association in 1912. The acute perforation occurred in an ulcer at the site of an excision seven months earlier. This patient also died.

In 5 other cases a secondary operation demonstrated recurrence of active ulceration at the site of the old excision; in 3 of these a posterior gastro-enterostomy has been performed with considerable relief; in the fourth case recurrence of ulceration had produced a marked hour-glass contraction of the stomach, and gastrogastrostomy combined with posterior gastro-enterostomy has apparently brought about a cure. In the fifth case an operative death followed anterior gastro-enterostomy.

The eighth case in which we have definite evidence of recurrent ulceration having taken place is worthy of description in detail. The patient was under the care of Mr. Dobson and the case was recorded by him in the communication I have already referred to. Briefly the case is as follows:

E. L., woman, aged 39, admitted July, 1910, with a very long history of gastric trouble. At operation an ulcer was found on the posterior surface of the lesser curvature high up near the cardia. Ulcer excised. Appendectomy. Readmitted June, 1911 (twelve months later), for recurrence of symptoms. There was tenderness and rigidity in the epigastric region. When the abdomen was opened, an ulcer was found on the anterior surface of the stomach adherent to the parietal peritoneum. The ulcer was situated below the scar of the previous excision and was quite distinct from it. It was found to have chronically perforated into the abdominal wall. The affected middle zone of the stomach was resected, the pyloric pouch closed and a posterior gastro-enterostomy performed into the cardiac portion. The patient has remained perfectly well up to the present time.

In three other cases a secondary operation has been performed but no evidence of active ulceration discovered, extensive adhesions about the pylorus and site of the excision evidently being responsible for the persistence of symptoms. A posterior gastro-enterostomy has been performed and the patients are much relieved. In the remaining 4 cases the patients have symptoms suggestive of recurrent ulceration, but no secondary operation has been performed.

To recapitulate, therefore, out of 39 cases of excision we have 15 cases in which severe recurrence of symptoms has occurred. Eleven have been submitted to a secondary operation; of these 7 showed active ulceration at the site of excision, 1 showed chronic perforation of an ulcer distal to the previous ulcer and 3 were the subjects of extensive adhesions with no evidence of active ulceration. Four cases have a return of symptoms but no operation has yet been undertaken.

One must confess that these results are not encouraging. It may be that the recurrence of ulceration is consequent on a too niggardly excision of the ulcer, but an ulcer occurring at a distance from the site of the excision, as was found in two of the cases, must be due to another cause, the persistence of the morbid condition which was responsible for ulceration in the first instance.

The presence of adhesions around the area of excision, by interfering with gastric mobility is evidently liable to produce symptoms even if there be no active ulceration.

Let us now see what are the results in cases which have been treated by gastro-enterostomy alone.

I have been able to trace 19 which were treated by posterior gastro-enterostomy; of these 1 is too recent to make the result certain, but of the remaining 18 patients, 11, or 61 per cent., are quite well at periods from six to two years after operation, 5 show marked improvement, 1 is not improved and the remaining one had a persistence of symptoms which have been relieved by the subsequent excision of a large and adherent posterior ulcer which was found to be unhealed nine months after the gastro-enterostomy.

In addition to these cases there are 3 in which an anterior gastro-enterostomy had to be performed, and 7 in which an anterior gastro-enterostomy in Y was done. Of these 10 patients 4 are quite well, 1 is improved, 1 is dead, 2 are not improved and 2 have developed jejunal ulcer. It will be seen, therefore, that the results of the anterior operation are not nearly so favorable as those of the posterior, and this may be accounted for by the fact that an anterior anastomosis has usually been necessary for cases in which a large ulcer was infiltrating the pancreas.

Of cases treated by excision of the ulcer and gastro-enterostomy I have traced 9, 4 of which are my own cases. Of the 9 patients, 6 have remained quite well up to the present and a seventh after eighteen months of good health has had a return of indigestion.

The remaining two cases present points of interest. One, a patient of Sir Berkeley Moynihan, died of acute pneumonia ten days after the operation, and at the necropsy it was noted that there was active ulceration spreading from the site of the excision and that the intestine contained a quantity of blood.

The other case has already been recorded by Mr. Dobson. Briefly, a large adherent ulcer was excised from the anterior abdominal wall and an anterior gastro-enterostomy with entero-anastomosis performed. Six months later the patient was readmitted. At operation a large jejunal ulcer was found just below the anastomotic opening and adherent to and perforated into the anterior abdominal wall, the scar of the previous excision being quite healthy. The whole of the anastomosis was excised and the continuity of the stomach and jejunum restored. The patient was thus left with a small stomach and without a gastro-enterostomy. She has remained perfectly well up to the present time, a period of three and one-half years. It will be noted that the original ulcer in this case was quite healed and it is probable that the recurrence of symptoms would have been avoided if it had been possible to perform a posterior gastro-enterostomy.

I am quite aware that the number of cases I have had at my disposal is rather too small to lay down any absolute rule as to the best method of treatment of this very serious type of ulcer, but the large proportion of cases in which actual ulceration persisted or recurred after excision and was verified by a second operation makes one doubt very much indeed whether this is an operation which can be recommended.

So far as one is able to judge from my figures excision and gastro-enterostomy produces the best results, gastro-enterostomy alone comes next and excision produces the worst results.

I am well aware that excision of a large ulcer may be an extremely difficult operation and to combine it with a gastro-enterostomy may in many cases entail such a strain on the recuperative powers of the patient, who is not infrequently extremely feeble, as to make it scarcely justifiable.

The difficulty of the wedge excision and the length of time required to combine with it a posterior gastro-enterostomy has led to the suggestion that a certain number of these cases can best be treated by a partial gastrectomy.

My colleague, Mr. Dobson, in the paper previously quoted, describes an operation by which the affected middle zone of the stomach is resected. After ligation of the requisite amount of the gastrohepatic and gastrocolic omenta, the stomach is divided between clamps on the distal side of the ulcerated area and the pyloric pouch closed by suture; the stomach is then turned over to the left and a posterior gastro-enterostomy performed well to the left of the ulcer. Clamps are now applied on the proximal side of the ulcer and the middle portion of the stomach removed. The cardiac pouch is then closed by suture. In cases in which the patient's condition will admit of it this operation is undoubtedly an excellent one and has the advantage over the type of partial gastrectomy which is performed for carcinoma in that it is less extensive and the closure of the pyloric pouch is more easily performed and less liable to be followed by leakage than is the closure of the duodenum when the line of section is distal to the pylorus.

If the conclusions of the Mayo Clinic with regard to the frequency with which carcinoma is grafted on chronic ulcer are to be relied on, it is an operation which should be performed whenever possible. I have been able to ascertain the late results in five patients on whom this operation has been done and they are all in perfect health. In a sixth case in which the middle zone of the stomach was resected and the continuity restored without the performing of a gastro-enterostomy a secondary operation became necessary and was followed by a fatal result. The operation described is one which seems to me to be more likely to give a good result than the resection of the affected zone and restoration of the continuity of the stomach. In suitable cases it can be more easily performed than a wedge excision and gastro-enterostomy and with a better prospect of a complete and permanent cure.

In five cases I have performed a partial gastrectomy, on the lines of the Rodman operation, for cratered chronic ulcer situated on the lesser curvature 1 or 2 inches on the proximal side of the pylorus. The method I employed was precisely similar to the operation for carcinoma, but the resection was not so extensive. One of these patients died as a result of a secondary operation which had to be undertaken to remedy a technical defect at the site of the anastomosis, but the other four patients made an uneventful recovery and at the present time are in perfect health, eating anything and better than they have been for years. There is no doubt that the ultimate results in these cases are better than in any other type of operation performed for chronic ulcer in this situation. Unfortunately a partial gastrectomy cannot be performed for the large ulcer which is found to lie close up to the cardia; a resection would leave insufficient material to allow of closure of the proximal pouch, and the operation would practically amount to a complete gastrectomy.

It is in such a case that the most difficult problem arises, and a solution of the difficulty may be found in a jejunostomy. Robson, Mayo and Moynihan have all drawn attention to the value of this operation; it may be used alone or in combination with a gastro-enterostomy in cases of irremovable ulcer, and by its

means the patient's nutrition may be maintained and improved and absolute rest given to the stomach. The technic of the operation is simple and though I have up to the present employed it in only one or two cases of inoperable gastric carcinoma, I have reason to know that it is an operation which has a certain sphere of usefulness in these very difficult cases of chronic ulcer.

As the result of the work of Robson, Moynihan and the Mayos, much has been done to place the surgery of gastric and duodenal ulcer on a sound basis, and when one looks back over the progress of the last fifteen years one notes its gradual development. The most salient feature of this progress has been the realization by surgeons of the type of case for which operative interference is indicated. At first gastro-enterostomy was confined to the cases which presented the complications of ulcer, stenosis and hemorrhage. As diagnosis improved, the operation came to be performed for the cure of ulcer before its complications became manifest; next it was done for symptoms alone when no naked-eye evidence of ulceration could be discovered, with the result that large numbers of patients were unrelieved and many made materially worse. When we came to realize that pain and vomiting after food did not necessarily mean the presence of gastric ulceration and that unless an ulcer was visible and palpable operative interference with the stomach was contra-indicated, the operation of gastro-enterostomy began to find its true place as one of the most valuable operations in the whole range of abdominal surgery.

The technic of gastric surgery leaves little to be desired, but there are still problems to be solved, and one of the most important is the treatment of the chronic ulcer of the lesser curvature. It may be that a clearer conception of the etiology of gastric ulcer would lead us by a short cut to the solution; but our notions of etiology amount to little more than theories and for the present it is only by a survey of the results of the different types of operation that we can arrive at what we wish to know.

If the paper I have presented to you to-day will assist in some small degree to this end I shall be more than pleased.

ABSTRACT OF DISCUSSION

DR. JOHN B. DEAYER, Philadelphia: I agree with Mr. Collinson. The diagnosis, if made early, before the oncoming peritonitis, is, comparatively speaking, simple, particularly if one can elicit a characteristic history, which, unfortunately, in a small percentage of cases, is impossible. In the majority of the thirty-two cases in which I have operated, with one death, the diagnosis had been made by my house surgeon when I arrived at the hospital. The patients had a clear history of pain after eating, extending over a number of years. One condition I failed to recognize on two occasions—perforation of the base of the appendix. I have seen this condition give rise to the characteristic board-like rigidity, rendering a diagnosis impossible. I have on two occasions withheld the knife on account of the uncertainty and have subsequently operated on these patients for appendiceal abscess. In one of these in which I believed a perforated duodenal ulcer existed I found extensive peritonitis below, and nothing wrong with the duodenum. I closed the abdomen, sent the patient back to bed and with anatomic and physiologic rest, recovery from the peritonitis ensued. My patients were operated on within twenty-four hours, with one exception, the majority in eighteen hours. The fatal case occurred in thirty hours and as Mr. Collinson stated, these are the cases in which the patients die, as a rule,

do what one will. Shock is of short duration. When I see the patients ten or twelve hours after the perforation I do not find them in shock. They have a pulse of 72, rarely above 80, but with a board-like rigidity of the abdomen. I go further than the Fowler position; I seat the patients straight up in bed. We all agree now not to irrigate. The procedure is drainage of the pelvis, except in very early cases, a stab wound and a glass tube. I still adhere to the use of the glass tube. One cannot expect as much from a cigaret drain or a rubber tube as from a glass tube. The vital question is whether a posterior gastro-enterostomy should be done when perforation is closed; and whether it, in addition to the closure, is of value to the permanent recovery of the patient. It takes only ten or twelve minutes more; it is one of the simplest operations in surgery for the expert surgeon. It has been argued that there is danger, in opening the lesser peritoneal cavity, of spreading peritonitis. In numerous bacteriologic examinations we have not been able to obtain cultures in early cases, therefore no peritonitis is present and this objection is removed. In certain cases much surgery would be foolish. In addition, if the ulcer is not indurated and practically closes the lumen of the bowel, I plicate the duodenum, at the same time reinforcing the ulcer. I believe a gastro-enterostomy is of value because, first, it relieves tension on the suture, purse-string or otherwise, which closes the ulcer; secondly, it changes the chemistry of the stomach, in that enough bile and pancreatic juice enters to neutralize the hydrochloric acid. The latter and not the drainage, I believe, accounts for the cure in these cases. I have never excised an acute ulcer. I believe there are few cases in which it is warranted. When the ulcer is close to the pylorus I frequently make a pylorotomy. The majority of these patients recover. The percentage of subsequent perforations I believe is low. On a number of occasions I have referred to a friend who has had three acute perforations, two of the duodenum and one of the posterior wall of the stomach. He had a posterior gastro-enterostomy done when the first perforation was closed. This man recovered from all three operations.

DR. ALBERT J. OCHSNER, Chicago: I believe that the surgeon is responsible in a large majority of these cases of recurrence. It is true that we are not absolutely certain of the cause of the ulcer, or, therefore, of the recurrence, and it is not proper to speak with the same certain feeling so long as we cannot be absolutely sure of the causation. I believe that Dr. Rosenow, of Chicago, has proved or will prove shortly that the cause of duodenal and gastric ulcer is a specific micro-organism which he has found in a large number of his cases and which, when applied properly to animals, has resulted in the production of these ulcers. It is true, however, that in these cases we have practically always vicious habits in the diet of the patient. The patient's history will determine that he has been eating things that would probably produce injury. In a large proportion of these cases we also find a great amount of infectious material either connected with the roots of the teeth, the tonsils, the posterior nares, or the eustachian tubes, so that much septic material is placed in the stomach constantly. This source of irritation should be eliminated. These patients should be taught how to take care of their stomachs after they leave our care. We know, also, that in almost all of these cases there is a period of hyperacidity. For about twelve years I have given each of these patients two carefully worked out diet lists, one to be used so long as this newly repaired lesion is in a fair condition, and with which any one could be satisfied. The other diet is to be used as soon as the patient suffers from the first symptoms of irritation or recurrence. It is similar to that which the internist or specialist in this line employs, namely, a non-irritating diet to which some alkaline substance like milk of magnesia is added. This diet is given every two or three hours, not oftener than every two hours, in order not to have half-digested food and raw food in the stomach at the same time and not at a longer period than three hours so that there shall always be a fairly

alkaline condition in the stomach so long as there is any irritation. In following this plan we have found that the jejunal ulcer has been eliminated in over 95 per cent. of the cases. We have had less than 2 per cent. of cases in which we have had a jejunal ulcer, and the proportion of recurrence is, I should say, not one-fourth as great as in the histories mentioned.

DR. JOHN M. T. FINNEY, Baltimore: I am compelled to dissent from much that I heard Mr. Collinson say. It seems to me that the procedure suggested by him and advocated by Drs. Deaver and Ochsner is not the rational procedure in the premises. In perforative gastric ulcer the majority will be on the anterior wall close to the pylorus. Therefore, why not enlarge the already existing hole a bit and excise the ulcer, the pathologic process which gave rise to the perforation, and then enlarge the pylorus sufficiently by means of a pyloroplasty so that there can be no possibility of its subsequent cicatricial contraction, which might necessitate a subsequent operation of gastro-enterostomy? If it be true that gastric ulcer is an important predisposing factor in the subsequent production of cancer, it is an additional argument in favor of getting rid of the process. It seems to me that these two arguments are sufficient to weigh down the balance in favor of the operation of pyloroplasty. I do not know whether Mr. Collinson mentioned that as a possibility. I refer you to a paper read by me in Chicago last fall which gives the statistics of 100 pyloroplasties performed by my assistants and myself. I want to insist that, in the first place, pyloroplasty is a more rational and more satisfactory operation than gastro-enterostomy. Now that may not be true in the hands of my colleagues, Drs. Deaver and Ochsner, and in the Leeds clinic where the operation of gastro-enterostomy is so well done. I am speaking of the general run of surgeons of the country. A deep-rooted feeling exists among the profession at large that gastro-enterostomy, while it works in the majority of cases, yet in general shows a large percentage of unsatisfactory results. I want to call attention to the fact that pyloroplasty, when properly performed, will do all that a gastro-enterostomy will do and more. If it is drainage that does the work, it affords drainage almost at the most dependent portion. If it is a chemical process that does the work then the reversed peristalsis causes the presence in the stomach of the contents of the duodenum. I have come to the conclusion that gastro-enterostomy should never be an operation of choice. It is only an operation of necessity. That means under all circumstances. I never perform it except when I cannot do a better thing. I noticed, too, an undercurrent of dissatisfaction with the results reported. It appeared that there had been a large number of recurrences. I would recommend excision of the ulcer through a pyloroplasty and then see what the results will be. I have found that, in a good many cases, the ulcer is situated on the posterior wall. It is impossible there, for obvious reasons, to excise it. The reason old chronic ulcers elsewhere don't heal is because of the dense fibrous tissue in the base which cuts off the blood-supply. In dealing with leg ulcers, for instance, I have found, for years, that if crucial incisions are made deep through the base of the ulcer, immediately granulations spring up and the ulcers will heal in an incredibly short time. I have done the same thing in gastric ulcer in the posterior wall, made crucial incisions in the base. If there was hemorrhage I stopped it with catgut suture. I have found that these ulcers do much better with this than any other form of treatment. Care must be taken, however, not to make the incision too deep.

MR. HAROLD COLLINSON, Leeds, England: I feel that it is unwise to say that in operating for an acute abdominal condition a certain procedure should be invariably undertaken and so I cannot go all the way with Dr. Deaver in his advocacy of a primary gastro-enterostomy. Dr. Deaver's cases were almost all early and these are the ones in which to perform gastro-enterostomy; but there are some in which a gastro-enterostomy would be absolutely unjustifiable. By the Fowler position I meant exactly what Dr. Deaver has described, one in which the patient is sitting straight up, a

position we adopt almost invariably in cases of peritoneal inflammation. Dr. Ochsner drew attention to the need for careful postoperative treatment in all cases of operation on the stomach; there is a tendency to believe that as soon as a short circuiting operation is performed the patient may be left to his own devices; this is not so, for considerable care in diet is necessary for some time. I was interested in Dr. Finney's remarks with regard to the operation which he has practiced and the results of which in his hands have been so successful. Quite recently at Rochester I saw a similar operation performed by Dr. Charles Mayo and Dr. Judd and I shall take the first opportunity of combining it with an excision for a lesser curvature ulcer or for ulcer on the posterior surface of the stomach.

THE AUTOSERUM TREATMENT IN DERMATOLOGY*

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It is a common criticism of the dermatologic specialty that it busies itself so largely with the purely scientific aspects of its field, and so little with the practical results that justify its existence. Medical men find that in our cutaneous journals and special societies we have much to say on minute points of pathology and microscopic findings, and that we are strong on differential diagnosis or rather on questions of terminology that we mistake for questions of diagnosis; but that we are strangely reticent on treatment, and rarely have anything that is generally useful and practical to suggest. In one sense this criticism is unjust; it has not been for want of effort that dermatotherapy has been for many years a comparatively unfruitful field. In another, however, it is merited. One of us (W. S. G.) looking back on the quarter century during which he has been more or less intimately connected with the specialty, finds but very few facts that can be justly said to be distinct and permanent steps forward either in our understanding of the nature of many common dermatoses, or in our means of curing them. To take a few of the commonest of the diseases of the skin: What can we do in eczema, psoriasis and lichen planus that our fathers could not do, and what more than they do we know of their real nature? Endless study and experimentation has led in most cases to an impasse.

It was therefore with considerable skepticism that we read the reports that have been published during the last year or two concerning the treatment of certain dermatoses with serum, autogenous or foreign; and the more so since these reports in some cases were of that very rosy hue which we have learned to know as the reflection of the subjective illumination of the observer. Here are a few of them:

Veiel¹ records a severe case of herpes gestationis, coming on very intensely toward the end of pregnancy, and resisting all treatment; he injected the serum of a healthy gravida, with temporary improvement. After a second injection of twice the amount there was very marked improvement, rapid disappearance of the itching, and cessation of the bulla formation.

* Read before the Section on Dermatology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Veiel: A Contribution to the Serum Treatment of Pregnancy Dermatoses, München. med. Wchnschr., 1912, No. 35.

Rübsamen² had two cases, one of severe pruritus due to pregnancy toxemia and the other a pustular herpes gestationis in childbed, which he cured by the injection of the clear blood-serum of healthy gravid women. Rongy³ has recorded good results in pregnancy pruritus from the same means. In these cases a foreign and not autoserum was employed; and in the toxic symptoms of pregnancy, including those appearing on the skin, the serum treatment seems to have definitely established its value.

Pretorius⁴ gives an account of a woman suffering from a severe chronic pemphigus, which he had long watched and treated. She was given 20 c. c. of blood from her husband; in eight days she was cured, and had had no relapse in eight months.

Spiethoff⁵ records good results in dermatitis herpetiformis, chronic urticaria, prurigo, psoriasis and chronic eczema from the autoserum.

Linser⁶ has used human serum (whether autogenous or not we do not know) with brilliant results in a case of herpes gestationis. In four cases of chronic urticaria he reports startling and immediate results fifteen minutes after the injections, fifteen out of his eighteen urticaria patients were cured by from two to three injections. Twelve prurigo patients were much improved by the injections, and, finally, from four to six months later, were nearly all cured. He obtained especially good results in pemphigus and dermatitis herpetiformis, and also in the eczemas of children.

Ullmann⁷ used autoserum injections in eighteen itchy dermatoses, without other treatment. In seven cases of dermatitis herpetiformis he obtained no results; in two cases of generalized eczema in children he obtained no results from the injections, but exceptionally good and quick results as soon as local treatment was instituted; three urticarias were improved but not cured; four cases of pruritus were cured, and one prurigo was much improved.

The results reported above, though conflicting in some respects, were sufficiently impressive to lead us without attempting any complete review of the literature of the subject to take up the matter last fall in the City Hospital of New York. Our facilities there for clinical experimentation of this kind are especially good. Twelve cases were treated there, six of very extensive general psoriasis, three of generalized eczema, two of pemphigus, and one of leprosy. The records have already been reported.⁸ Since that time we have obtained records of six private cases of psoriasis, two cases of radiodermatitis, and one each of chronic urticaria, pustular acne with dermic abscesses, furunculosis and lichen planus. That this list is a comparatively small one is due to various factors. The process of treatment is rather troublesome, and above all, takes care and time. In the busy hospital, with many demands on the laboratory and house staff, it was difficult to arrange for the proper treatment of any long series of cases. In private practice other factors, such as the idiosyncrasies of the patients, and the question of expense, naturally inter-

fered. What interests us here more especially is first, the results, and second, the method to be employed. We shall consider the latter first.

To those experienced in intravenous medication technic, this presents no difficulties, the only additional apparatus required being an efficient electric centrifuge and some platinum needles. The ordinary centrifuge will not do, since it is too slow and it would take too long to separate the serum thoroughly. An electric machine capable of making at least 4,000 revolutions a minute is required; this will thoroughly separate the serum in about half an hour. The tubes should be large enough to hold about 200 c. c. of blood; we employ four of about 60 c. c. capacity apiece. It being desirable to avoid all possible transfers of the blood and serum, we draw the blood directly into the centrifuge tubes. A platinum needle of large caliber is used for the venipuncture; this is much smoother on the inside than the steel needles, and very much more fluid can be obtained before occlusion occurs; besides this, the needle can be more readily and thoroughly sterilized in the flame. It is well to have one or two extra venipuncture needles in reserve, so that no time is lost in re-sterilizing, if necessary, and so that two needles can be introduced simultaneously if the flow is too slow. One of the minor difficulties encountered in our first work in the hospital was the trouble in obtaining the requisite amount of blood with needles of the ordinary caliber and material; as a rule not more than from 15 to 20 c. c. could be obtained from one puncture, and the flow was very slow. With the platinum needles we can obtain 200 c. c., the largest amount hitherto drawn, in from three to ten minutes, depending on the blood-pressure; in some cases the flow from the vein is in a continuous stream and not in drops.

The blood is allowed to clot thoroughly, which takes about ten minutes; the clot is then well broken up with a glass rod, and centrifuged at high speed. In the electric centrifuge at about 5,000 revolutions a minute this takes from thirty to forty minutes. In a slower, water-driven or hand centrifuge it would take much longer, which is an additional objection to their use; the serum should be reinjected within about an hour after the blood is drawn. All utensils coming in contact with the blood or serum should be cool.

The amount of blood drawn has varied from 40 to 200 c. c., usually the latter amount or an approximation to it; and the serum recovered has been from 40 to 45 per cent. of this quantity. We had little to guide us as to dosage in the beginning. The German investigators usually employed from 25 to 60 c. c. of serum at a dose, some of them asserting that exactly the same results were obtainable from the smaller as from the larger amounts.

The serum recovered is injected into a vein, usually on the other side from that from which the blood is drawn, and the operation is completed. We use an ordinary salvarsan needle for the reinjection.

We have now given over 250 of these autoserum injections, without seeing, save in a single case, any contra-indications to their employment. The patients feel no effects at all either from the drawing of the blood or from the reinjection of the serum; they go back to their occupations as soon as the operation is completed. The one exception was in a very bad case of gangrenous radiodermatitis, in a case of leukemia in which the patient did marvelously well under the first four, but had a reaction, and chills followed by

2. Rübsamen: A Further Contribution to the Serum Therapy of Pregnancy, *Deutsch. med. Wchnschr.*, 1913, No. 20.

3. Rongy: New York State Jour. Med., January, 1914.

4. Pretorius: Pemphigus Malignus Cured by a Single Intravenous Blood Injection, *München. med. Wchnschr.*, 1913, No. 16.

5. Spiethoff: On the Therapeutic Use of Autoserum, *Deutsch. med. Wchnschr.*, Oct. 18, 1913; On Treatment with Autoserum and Auto-blood, *Arch. f. Dermat.*, January, 1914.

6. Linser: *Dermat. Wchnschr.*, Oct. 18, 1913.

7. Ullmann: *Arch. f. Dermat.*, September, 1913.

8. Gottheil, W. S., and Satenstein, D. L.: Autoserum Injections in Certain Obstinate Dermatoses, *Med. Rec.*, New York, 1914, lxxxv, 620.

fever after the fifth and sixth, which we took to be attacks of serum sickness due to the sensitizing of the organism by the previous injections. We have never seen any similar occurrence in another case, no matter how many injections were administered.

Following is a brief summary of the results so far obtained: The cases were eighteen in all, twelve of psoriasis, two radiodermatitis, and one each of furunculosis, pustular acne and dermic abscesses, chronic urticaria, and lichen planus. To take the last first, the pustular acne has been very markedly improved, is still under treatment, and is nearly cured; and the urticaria, lichen planus and furunculosis got much better while subjected to it. One of the radiodermatitis cases was a gangrenous one, and the result here was not to be described as otherwise than astounding. The details have been given elsewhere. The patient was apparently in a hopeless condition; he was constantly under opiates, could hardly get out of bed, and the sloughing ulceration had been almost unaffected by the various local and general measures that had been tried. The result of even the first injection was the rapid throwing off of the necrotic tissue, beginning cicatrization of the ulceration, cessation of the agonizing pain and the tenderness, and a rapid convalescence. This was the patient who had the symptoms of serum sickness after his fourth injection; the treatment was stopped in consequence of it; at present the patient is perfectly well and attending to his business; the ulceration is three-quarters healed, healthy, and slowly closing up under ordinary surgical local treatment.

While in these various affections our results have been only partially satisfactory and of a nature that enables us to say only that the autoserum injections deserve further trial in these and kindred diseases, in psoriasis they have been uniform, and extremely satisfactory. We have now twelve carefully observed cases on record, all of them of the severe and extensive type of the disease. Many of these patients had had psoriasis for many years or all their lives, so far as they could remember; some of them had had repeated courses of treatment without any noteworthy results, or with partial or very temporary results; some had been treated for half a lifetime without benefit, and others had long given up all attempts to cure the disease. One and all were enthusiastic for the treatment, and one at least has voluntarily asked for another course of the injections to prevent the possibility of a relapse. On the latter point we have as yet nothing to say; the time has been too short; many of the patients have disappeared, which an enthusiast might take as evidence that they needed no further treatment.

These patients were given from four to six autoserum injections at intervals of from five days to one week, during which time they were not hospital patients or confined to bed, but could pursue their ordinary avocations. During this time also no local treatment other than ordinary baths and soap frictions were employed. In most cases the efflorescences became paler and less elevated, and showed signs of beginning retrogression. Then, at the end of the serum course, treatment with a weak chrysarobin petrolatum, 2 or 3 per cent. for the body, and an equally weak white precipitate ointment for the head and hands, was begun. In from three to eight days every lesion had disappeared, with but very little if any dermatitis

from the medication. This also has been the case with gigantic indurated plaques of years' standing, and with patients who have been treated *secundum artem* many times without effect, or who had had their bodies cleaned before at the expense of six weeks treatment with 40 per cent. chrysarobin ointments, violent dermatites, and the administration of arsenic in very large doses. Those who had been through cures before, or who had given up their cases as hopeless, were loudest in their praise of the new method.

Questions as to the theory on which these injections are employed, which are asked by every patient and by every physician, have to be answered in the main by a confession of ignorance. So long as we are unaware of the real nature of most eczemas, of psoriasis, of lichen planus and other common skin affections, our therapeutics is necessarily empiric and based on the experience of accident. In view, however, of the great development and refinement of microscopic technic in recent years, we are justified in regarding it as probable that there are no micro-organic causes for their occurrence; any such would probably have been discovered by the unremitting work that has been devoted to them by multitudes of investigators. We must look to some change in metabolism, to some derangement of the internal economy, for their explanation. Nor does it seem likely that any metabolic change of the grosser sort will be found at fault; these have been thoroughly investigated, and have thrown no light on the subject.

The most promising field of investigation into the etiology of the still mysterious dermatoses is that of the internal secretions. In that as yet little known domain there are certain well known facts that are worth noting in this connection. The bronzing of the skin and mucosae and the falling of the hair in Addison's disease are admittedly due to derangement of the suprarenal glands. The thickened, white, cold and always dry condition of the skin in myxedema, together with the brittleness of the nails, falling or premature whitening of the hair, with irregularities in the development of the teeth, are recognized results of disturbances in the thyroid glands, and are remediable by the administration of thyroid extract. Thyroid hypersecretion, giving us the symptom-complex known as Basedow's disease, makes the skin smooth, thin and moist, and the nails and hairs brittle. Scleroderma is ascribed by some authorities to dysthyroidism; and a connection between the two conditions in certain cases at least cannot well be denied. Alopecia areata, occurring as it does usually at adolescence or at the climacterium, is thought with some reason to be in some way connected with the hyperactivity of the generative glands; and the hypothesis has been evolved that the mysterious and characteristic premature alopecia that occurs so commonly in the male at the time of the greatest activity of the reproductive organs may be in some way connected with their internal secretion. With persistent thymus, the so-called status thymuslymphaticus, there are frequently changes in the skin and its adnexa; the integument is pale, and there is often either a heterosexual hair-growth, or these structures are partly or entirely undeveloped. In acromegaly, dependent on increased secretion of the pituitary gland, the skin is usually thickened and pigmented, the sweat increased, and the hair development either deficient or very abnormally increased. The dystrophies of heredosyphilis are not to be explained on

the theory of a direct action of the invading organism, and may possibly be secondary effects due to dyssecretion of the endocrinous glands. It can hardly be denied that there is some relationship between either unusually active or deficient internal secretion of the ovary and testis in such conditions as acne juvenilis, chloasma uterinum, and the various menstrual, pregnancy and parturition exanthems. In diabetes, changes of the skin and its adnexa are common; the bronze diabetes and xanthoma are extreme instances.

Cederkreutz,⁹ in a recent review of the subject, believes it possible that there is an internal secretion proper to most or all of the body-tissues; that their action and correlation deserve careful study; that the idea of Claude and Gougerot that an *insuffisance pluriglandulaire*, and not a derangement of a single secretion may be the basis of skin changes, has much plausibility, and that, in addition to the affections already mentioned, the internal secretions offer us the most hopeful field for investigation as to the etiology of vitiligo, psoriasis, ichthyosis, lichen planus, pruritus senilis and xeroderma pigmentosum.

Psoriasis is perhaps the most mysterious of the common dermatoses. Schamberg's elaborate studies seem to point to nitrogen retention in the system as a factor in its etiology, and the results of an absolutely meat-free diet in some cases is well known to all of us. Occasional cases seem to be dependent on mental conditions, such as worry and overwork. But in the vast majority of cases we are entirely at a loss to ascertain its cause. On the other hand, the administration of thyroid extract and epinephrin has done good in some cases. It seems very unlikely, with the history of the affection and the unending efforts that have been made to find it, that a microbic cause will be found. Some derangement of the endocrinous secretions seems to be the most promising field for future etiologic investigation.

We are naturally not in a position to say much as to the action of the blood-serum when administered in the way that we have described. It is more than probable that the blood-serum reinjected is by no means just the same material that was withdrawn in the previous bloodletting. Blood-serum is an extremely complex material, and it is undoubtedly changed by its retention for a time outside the body, by the coagulation and centrifugation. The fact that in one case we saw distinct attacks of serum sickness follow its administration is proof of the fact. There can be no doubt that its administration in some way alters the sensibility of the skin, increasing its susceptibility to local medication, and at the same time diminishing its liability to the growth of psoriatic efflorescences and to reactive inflammation. How this is effected, whether by supplying a deficiency of some material elaborated by the endocrinous glands, or by stimulating one or more of them to renewed activity, or by supplying some material required for their action, we are unable to say.

One further point deserves mention. Is it possible that the good results attained are due to the bloodletting alone? The thought has often struck me, as it must have struck others, that the generations of acute observers and habile clinicians who practiced bloodletting in so many affections cannot have been entirely wrong; they must have seen some good result in some cases at least. And there is at least one case of

psoriasis on record, to which our friend Dr. P. Brynberg Porter has called our attention, in which the late Weir Mitchell in his young days, being left in charge of a very bad case of psoriasis and not knowing what to do, put the patient to bed and bled her every day, and cured her disease. Bloodletting alone, however, has been tried, and has not given results. We do not think that the benefits of the procedure can be ascribed to it.

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ABSTRACT OF DISCUSSION

DR. HOWARD FOX, New York: My attention was first called to this subject by a demonstration given by Dr. Gottheil before the Manhattan Dermatological Society in New York. Two cases of psoriasis were shown in which the therapeutic results impressed me as remarkably good. A little later I saw a further demonstration of this method in Dr. Fordyce's service at the City Hospital, and was again impressed favorably. I then took up the work myself and within the past few months have treated thirty cases by autoserum, twenty-five of these being patients suffering from various forms of psoriasis. All of my patients with psoriasis were given three injections of serum at intervals of a few days, followed in every case by local inunctions of chrysarobin, and at times, in addition, by covering the lesions with rubber cloth. The results of this serum treatment have been unusually good and in some cases truly remarkable. The crucial test of the serum treatment is when it is applied to patients who have previously been treated in vain by the recognized methods: such as the local use of chrysarobin, diet, etc. A number of refractory cases in which the patients had been treated for a considerable time by my father and myself by various methods, cleared up after the combined serum and chrysarobin method in a most astonishing and gratifying manner. Whether the results will be more permanent than heretofore it is of course impossible to say. Some other obstinate dermatoses were also treated, including eczema, lichen planus and dermatitis herpetiformis. In one case of the last-mentioned disease, of six months' duration and moderate severity, the condition had not been benefited in the least by the use of tar, sulphur and other ointments. Two days after the third injection of autoserum, no other treatment being given, there was an immediate cessation of all itching, and from that moment a rapid disappearance of the lesions. My technic consisted in withdrawing 50 c.c. of serum at each sitting, and injecting as much serum as could be obtained by prolonged centrifuging. The serum was generally injected intravenously; at times intramuscularly. I believe that in the autoserum we have a valuable aid in treating one of the most obstinate of chronic skin-diseases, namely, psoriasis.

DR. JAMES M. WINFIELD, Brooklyn: We have been studying the autoserum injection method of treatment in the other large charity institution in Brooklyn, and one of the most startling results we have thus far obtained has been in a case of pemphigus. After the initial injection the condition was aggravated; the second injection produced no noticeable effect, but after the third dose a steady improvement began. In psoriasis our experience was similar to that of Drs. Gottheil and Satenstein. We did not withdraw as much blood and we did not follow the injections with vigorous chrysarobin inunctions, but our results were excellent. I think the subject is a vast one and the treatment is bound to be of benefit in skin-diseases. In psoriasis we know that any new method of treatment may effect an apparent cure, and the question is whether or not the improvement after this method will be permanent. We must keep these patients under observation and see if the cure will be more lasting than that accomplished by other methods.

DR. JOHN A. FORDYCE, New York: I have employed this method at the City Hospital and the Vanderbilt Clinic, as well as in my private practice, in psoriasis, in chronic recurrent urticaria, in dermatitis herpetiformis and to some extent in pemphigus. I have had encouraging results in a number of

9. Cederkreutz: *Praktische Ergebnisse auf dem Gebiete der Haut- und Geschlechtskrankheiten*, A. Jesionek, 1914.

cases of psoriasis, notably in one patient, who had an acute generalized psoriasis develop on a chronic psoriasis. She had never been absolutely free from the disease for years. After she had received five intravenous injections of autoserum the eruption improved. She was then put on a 2 per cent. chrysarobin ointment, and within forty-eight hours the eruption disappeared entirely. That was about two months ago, and since then she has had a few slight recurrences. My most impressive result by this method was in a case of dermatitis herpetiformis, with most intense and persistent multiform lesions, with vesicles and bullae. The patient, a girl, was compelled to give up her position on account of the severe itching, with insomnia and loss of weight. After the first two injections of autoserum the lesions increased in number and the itching became more intense—so much so, in fact, that the patient objected to further treatment, but after some urging she was given three more injections and then put on a mild calamine lotion. Within a week the eruption, together with the itching, had practically disappeared, and she was able to resume her work. Recently, she had a slight recurrence and she is now receiving a second series of injections. Those two cases show the most striking effects of the treatment that I have seen. I have also tried it in chronic persistent urticaria, but have not been so much impressed with its value. In one case of angioneurotic edema of the cheek the autoserum did not have much effect, but the method is worth trying. I think the technic described by Dr. Gottheil can be improved if he will use a MacRae needle attached to a large centrifuge tube. It is very easy then, by producing a vacuum in the tube, to permit the blood to run through.

DR. WILLIAM THOMAS CORLETT, Cleveland: Two cases of dermatitis herpetiformis have been under my observation for the past year. The first one was treated with normal salt solution injected into the veins every third day for a period of three weeks. When I recently heard of the method of treatment described by Dr. Gottheil I had under my observation a case of dermatitis herpetiformis in a woman who had recently miscarried. When she was admitted to the hospital we were able to withdraw only about 40 c.c. of blood, from which, approximately, 20 c.c. of serum were obtained. This was injected intramuscularly the following morning; in a few days there followed marked improvement. On account of the patient's anemic condition we have not been able to repeat the injection. To lessen the danger of extraneous infection a suggestion of Dr. Cole was followed which modified the technic by placing the blood in an incubator over night and decanting the serum on the following day.

DR. CHARLES J. WHITE, Boston: At the Massachusetts General Hospital we have taken the blood from a healthy person and injected it "whole" into the patient. We have tried this in cases of rebellious eczema and in dermatitis herpetiformis without any striking success.

DR. M. L. HEIDINGSFELD, Cincinnati: I have had considerable personal experience with serum treatment in chronic dermatoses, using heterogeneous serum, subcutaneously, after the method described by Dr. White, and have obtained good results, particularly in dermatitis herpetiformis (Duhring) and some of the chronic persistent forms of dermatitis. It has failed utterly, however, in some particular types, notably the chronic bullous dermatitis of several years' duration, following vaccination.

DR. WILLIAM S. GOTTHEIL, New York: We are well aware that the autoserum injections alone do not cure psoriasis, though in almost every case there is a distinct and in some cases a very marked improvement under their use alone. They affect the skin in some as yet undetermined way, possibly through their influence on one or all of the internal secretions, so as to lessen the appearance and growth of the psoriatic efflorescences and to render the integument more susceptible to the ordinary remedies. After their administration we get marked and very rapid results from very weak local applications, and complete the cure, so far as the immediate lesions are concerned, in a very few days. That the serum undergoes some change while outside the body is undoubted, both from its effects on the efflorescences and on the subsequent local treatment, and from the marked anaphy-

lactic reaction that we have observed in several cases. The integument apparently becomes sensitized to the proteins of its own blood or corpuscles after a few injections. In view of the complexity of the organochemical reactions that go on in the blood when withdrawn from the body, and of our small knowledge of their exact nature, we consider it dangerous at present to keep the blood for any prolonged period before reinjecting it, as was done by Dr. Cole in the case mentioned by Dr. Corlett. So far, an hour and a half is the limit of time that we have allowed to elapse before reinjection.

DR. H. N. COLE, Cleveland: In the case cited by Dr. Gottheil, neosalvarsan was mixed with the serum and kept over night. There is no danger in keeping the unmixed serum over night.

ROENTGENOLOGIC OBSERVATIONS ON THE FUNCTION OF THE ILEO- COLIC VALVE

WITH SPECIAL REFERENCE TO THE CAUSATION OF
ILEAC STASIS*

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The subject of intestinal stasis, particularly ileac stasis, has recently aroused much interest and not a little controversy. Most of the discussants are agreed as to the significance of ileac stasis, but the mechanism of its causation, and, consequently, the choice of methods aimed at its relief, has been the subject of much theorizing and controversy. Enteroptosis, adhesion bands, various pericolic membranes, intestinal kinks, cecum mobile, and typhlatony have been among the causes named; but the instances in which ileac stasis exists without any demonstrable bands or kinkings are so numerous it seems some other cause must be found to explain the stagnation.

It is, therefore, important to determine, if possible, the correct basis on which to build the argument relating to the causation of ileac stasis. If the case be the kinking of the terminal ileum or some similar lesion and it is conceded that, in comparatively rare cases, obstructing kinks and adhesions do occur, careful consideration must be given the recommendations for serious surgery which seem to be indicated. On the other hand, if the ileac stasis be dependent on some other and simpler cause as, for instance, ileocecal sphincter spasm or incompetency of the ileocecal valve, there will be little indication for hazardous surgery.

For several years (since 1910) I¹ have been urging ileocolic valve incompetency as an explanation of a large share of these cases of ileac stasis. In September, 1912, I reported a series of 200 gastro-intestinal cases,² most of the patients being constipated, in which 33, or 1 in 6, showed ileocecal valve incompetency when tested by the bismuth enema. In August, 1913, I reported a much larger series of 1,500 persons,³ tested by means of the bismuth enema, in which nearly 250, or again 1 in 6, showed ileocolic valve incompetency. It should be emphasized that this

* Read before the Section on Pathology and Physiology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Case, James T.: Proc. Am. Roentgen-Ray Soc., 1911.

2. Case, James T.: Tr. Am. Roentgen-Ray Soc., September, 1912.

3. Case, James T.: Proc. XVII. Internat. Cong. of Med., Section on Radiology, London, August, 1913; also in Med. Rec., March 7, 1914.

large series of patients were all suffering from gastrointestinal symptoms and most of them were seeking relief from constipation. I have now found more than 500 cases of ileocolic valve incompetency, the frequency of occurrence remaining about 1 in 6 of the cases examined.

The anatomists describe the ileocolic valve as formed by partial inversion or telescoping of the ileum into the cecum. The end of the small intestine is invaginated through the wall of the large bowel, carrying with it certain layers of that wall which project into the cecum as two folds, lying, respectively, above and below its orifice and constituting the two segments of the ileocecal valve. The peritoneum and the longitudinal muscular fibers of the bowel do not take part in this infolding, but are stretched tightly across the crease produced on the exterior by the inversion, thus serving to preserve the fold and the formation of the valve. According to Cunningham, whose description has just been given, the efficiency of the ileocolic valve is largely due to the oblique manner in which the ileum enters or invaginates the cecum, and he states that, in the great majority of instances, when in position within the body, the ileum is perfectly protected from a return of the cecal contents. In fact, anatomists are almost unanimous in thus considering the normal ileocolic junction a barrier against a reflux of cecal contents.

According to Arthur Keith⁴ there are muscular fibers situated directly at the ileocolic orifice which are evidently designed to secure that orifice from reflux from the cecum. In addition to the sphincter action of the circular muscles included in the valve itself, the last few centimeters of the terminal ileum present a distinct thickening of the circular muscular coat which seems to be endowed with a special tonic function; it serves as a sphincter for the terminal part of the ileum. This sphincter relaxes in front of the peristaltic wave, allowing the passage of food into the colon, but, on the other hand, it contracts, as a rule, against any regurgitation which might be caused by contractions in the colon. In marked contrast to the rest of the bowel in its relation to the central nervous system, the ileocolic sphincter is not affected by vagus stimulation. According to Elliott, stimulation of the splanchnic nerves causes complete relaxation of the terminal ileum and produces a strong contraction of the ileocolic sphincter. These statements are based on the current teachings relating to the anatomy and physiology of the ileocolic junction.

It thus appears that the ileocolic junction is possessed of a double function, namely: (1) a sphincter action which controls the passage of ingested food from the ileum into the colon and tends to protect the ileum from a reflux of cecal contents; (2) a valve action which is probably purely mechanical, guarding against reflux back into the ileum. Much of the force of the arguments relating to ileocolic valve incompetency as a factor in the causation of ileac stasis hinges on the determination of whether or not the ileocolic valve is normally competent.

Most anatomists and physiologists have thus far agreed that the valve is normally competent. The work of Cannon and others on antiperistalsis adds importance to the conception of normal ileocolic valve competency. Our present-day conceptions of the functions of the ileum and of the colon point to the need of such a barrier. My Roentgen-ray studies on

colonic peristalsis and antiperistalsis confirm, almost to the minutest detail, Cannon's deductions from Roentgen-ray observations on animals.

Bull,⁵ in 1878, after a careful series of experiments, stated his belief that, in the living body, fluid could not be forced beyond the ileocolic valve, but when the bowel was overdistended by air the valve was rendered incompetent and the air entered the small intestine. Dawson,⁶ in 1885, experimenting on the cadaver, concluded that the ileocecal valve, when normal, effectually guards the small intestine from gas and fluid from below. Ziemssen⁷ recommended inflation of the rectum as a means of diagnosis and treatment by "special procedure," the patient being placed under anesthesia. He states that ordinarily the small intestine is closed to the return of material from the cecum by the ileocolic valve, but under deep chloroform anesthesia this resistance is decreased and fluid can be forced into the small intestine. Heschl,⁸ after a number of experiments, agreed with Ziemssen as to the normal barrier function of the valve.

On the other hand, a few observers, such as Cantani,⁹ firmly believed that the ileocolic valve was permeable to fluid injections and suggested that the small intestine be utilized in cases of rectal alimentation. In one instance in which he treated acute bowel obstruction by injection of oil, half an hour later a part of the oil was vomited. Ziemssen records a similar case in which a fistulous connection between the colon and the stomach was suspected because the patient vomited oil shortly after an oil enema. Hemmeter, Church, and Gruetzner¹⁰ have all conducted experimental work which supports the idea that, in certain cases at least, the ileocolic valve permits the reflux of material from the colon. Yet Boyd¹⁰ makes the statement that the reflux of fluid through the ileocolic valve cannot, in every case, be expected, and that he has frequently failed to find insoluble substances, such as charcoal, in the gastric contents, in cases in which charcoal had been added to the nutrient enemas.

Illoay¹¹ reports four cases of intestinal obstruction treated by forcing water past the ileocecal valve, with recovery in three cases. In this connection it is proper to refer to the experiments of Senn¹² who, discussing the use of rectal injections in overcoming bowel obstruction due to invagination, concluded that, when the obstruction is located beyond the ileocolic valve, no reliance can be placed on this method. Senn based this statement on carefully conducted experiments on animals in which fluid was forced beyond the ileocecal valve. In two cases post-mortem examination revealed longitudinal lacerations of the muscular coat of the rectum. A third animal died immediately after the experiment from the effects of the injection. Further, but less crucial, experiments were carried on in man. Senn concluded that "the forcible injection of water beyond the ileocolic valve must therefore be recognized as a dangerous expedient and should never be resorted to."

Senn further states, however, that, in the healthy adult, the competency of the ileocolic valve is overcome by rectal inflation under a pressure of from

5. Bull: Virchow's Jahresbericht, 1878, ii, 205.

6. Dawson: Lancet-Clinic, Feb. 21, 1885.

7. Ziemssen, quoted by N. Senn: Experimental Surgery, 1889.

8. Heschl: Zur Mechanik diastaltischen Darmperforationen, Wien. med. Wchnschr., 1881, No. 1.

9. Cantani: Virchow's Jahresbericht, 1879, ii, 180.

10. Quoted in Sutherland's System of Diet and Dietetics, 1908, p. 287.

11. Illoay: Am. Jour. Med. Sc., xli, 168.

12. Senn: Experimental Surgery, 1889.

4. Keith, Arthur: Proc. Roy. Soc. Med., April, 1913 (supplement).

1½ to 2¼ pounds, and that this amount of pressure is not sufficient to injure the bowel. Behrens agrees with Senn in this statement. The incompetency of the valve is caused in cases of overdilatation by a lateral and longitudinal distention of the cecum which mechanically separates the margins of the valve.

In 1897, Max Hertz¹³ of Vienna, while practicing abdominal massage on a patient for abdominal pains, observed peculiar symptoms, which after further study on other cases, led him to describe a symptom-complex of insufficiency of the ileocecal valve. In 1910, and on numerous occasions since, I have demonstrated, roentgenologically, the retrograde filling of the ileum after bismuth clysmas. Holzkecht and Singer,¹⁴ in 1911, mentioned the relatively frequent occurrence of ileocecal valve incompetency in connection with chronic obstipation. In 1912, Groedel¹⁵ reported insufficiency of the ileocecal valve and submitted roentgenologic evidence. In 1913, Groedel¹⁶ continued his discussion of ileocecal valve incompetency and there appeared papers by Dietlen,¹⁷ Kellogg,¹⁸ Reider, Schwarz,¹⁹ Katsch²⁰ and myself.²¹

From certain quarters, however, have come expressions of doubt as to the serious significance of ileocecal valve incompetency, and skepticism has been expressed concerning the normal competency of the valve. I therefore wish to tabulate at some length a series of findings, most of them roentgenologic, which seem to indicate that the ileocecal valve is normally competent, protecting the ileum from a reflux of cecal contents.

1. The ileocecal valve is almost universally present in vertebrate animals (Kellogg¹⁸). I have found the ileocolic valve of the dog and of the pig competent, withstanding enormous distention of the colon by gas. The following surgical operation on a dog is submitted as further evidence of the competency of the ileocolic valve, at least, in the dog. The pelvic colon and the ileum were so divided and reinserted that the course of the food was from the ileum into the descending colon, then through the transverse, the ascending, and through the ileocolic valve and the last 10 inches of the ileum into the pelvic colon and rectum. Dr. D. B. Phemister, who performed the operation, reported that the dog died of intestinal obstruction thirty-six hours later, intestinal contents having accumulated on the distal side of the ileocolic valve, which remained thoroughly competent.

2. A young man was given a silk string 9 meters long, one end of which he swallowed. At the end of twelve hours, the string had transversed the entire gastro-intestinal tract. By means of the bismuth enema, I tested the valve competency on two separate occasions before introducing the thread, and again after the thread was in place, and found that the valve was thoroughly competent. Then, for the purpose of an experiment on electrical stimulation of the bowel, the thread being used as a guide, a metal electrode was introduced as far as the upper end of the descending colon, incidentally considerable traction being made on the thread in an unsuccessful effort to pass

the sound around the splenic flexure. Roentgenograms made a few moments later showed the terminal ileum filled for a considerable distance. This was attributed to traction on the thread, rendering it taut in the region of the valve, producing temporary incompetency. After the experiment was concluded and the thread withdrawn, another bismuth enema was injected, and the valve was again found to be competent.

3. In a certain number of cases, following the injection of a bismuth enema, the head of the bismuth column will pass the ileocecal valve and fill the terminal ileum for a varying distance. As already mentioned, I have found ileocolic valve incompetency in about one-sixth of my bismuth cases. This statement is based on the roentgenoscopic examination of more than 3,000 persons (June, 1914), most of them constipated, and all suffering from gastro-intestinal disturbances. Dietlen,¹⁷ in 100 cases, found 22 in which the bismuth clysmas showed ileocecal valve incompetency, 1 to 5. Holzkecht and Singer¹⁴ found 3 cases of valve incompetency out of 15 cases examined, or 1 in 5. On the other hand, Dietlen observed insufficiency of the valve in only one of the normal cases which he examined during a period of several years. This agrees with my experience in examination of a number of presumably normal persons.

The method of testing the competency of the valve is the following: The patient should lie supine on the horizontal fluoroscopic table. It is not necessary to introduce the rectal point, or colon tube, more than 1 or 2 inches. The container should be placed not higher than two feet above the patient and the barium or bismuth enema allowed to flow by gravity, the course of the bismuth column being watched fluoroscopically. Ordinarily 1,200 c.c. of the barium enema at 100 F. will suffice to fill the colon. It is important that a uniform technic be followed. I insist on seeing, by means of the fluoroscope, that the cecum is well filled. Massage of the abdomen over the shadow of the cecum is practiced in the antiperistaltic direction. Still further to insure complete filling of the cecum, the patient is sometimes asked to lie on the right side for ten or fifteen minutes after the injection of bismuth, and a second examination is made when the patient returns to the table after evacuating the colon. The roentgenograms are made with the patient lying prone, plate anterior, rather than lying supine, plate anterior. In the latter position "saddling" of the ileum over the iliopectineal line may lead to confusion. In marked cases of ileocolic valve insufficiency, however, there is never any difficulty in recognizing the terminal ileum.

4. When the valve is once found incompetent it has been possible to demonstrate incompetency during succeeding tests. I have tested the valve a second time in more than fifty cases and on numerous occasions, a third time. The incompetency is seen to be a constant phenomenon in all cases in which it is once seen.

5. In preparation for the enema test, thorough preliminary cleansing bowel-flushings are ordered two hours before the bismuth test. Every once in a while, a patient complains bitterly that the cleansing enemas make her ill. Patients find difficulty in describing their feelings accurately; it seems to be a peculiar, sickening sensation accompanied by abdominal distress and nausea. Almost invariably it is found in these cases that the bismuth enema ascends

13. Hertz, Max: Wien. med. Wchnschr., 1897, Nos. 56 and 37.

14. Holzkecht and Singer: München. med. Wchnschr., 1911, No. 48.

15. Groedel: Verhandl. d. deutsch. Roentgen Gesellsch., 1912, viii, 56.

16. Groedel: Fortsch. a. d. Geb. d. Roentgenstr., 1913, xx, No. 2.

17. Dietlen: Fortsch. a. d. Geb. d. Roentgenstr., 1913, xxi, 23.

18. Kellogg: Med. Rec., June 21, 1913.

19. Schwarz: Die klinisch. Roentgendagnostik des Dickdarmes, Berlin, 1914.

20. Katsch: Fortsch. a. d. Geb. d. Roentgenstr., 1913, xxi, 177.

21. Case, James T.: Proc. Am. Roentgen-Ray Soc., 1914; New York Academy of Medicine, Jan. 15, 1914.

a considerable distance into the terminal ileum, which seems to be wider than usual.

6. A still more convincing evidence of ileocecal valve incompetency, at least to me, is the reflux of ingested bismuth from the colon into the ileum. I have observed this reflux of ingested bismuth in more than seventy cases. For example, the terminal ileum is seen to be empty at the tenth or twelfth hour following the bismuth meal but at the twenty-sixth hour the terminal ileum is again filled with bismuth though no bismuth has been taken in the interim. Roentgenoscopic examination for this purpose must be conducted with the patient horizontal, so that accurate visualized palpation may be practiced under the fluorescent screen. Often, by massage in the anti-peristaltic direction, bismuth ingesta may be forced back into the ileum from the cecum. Such cases invariably show extreme incompetency to the enema.

7. The literature concerning rectal alimentation contains the statement that if the nutriment be given in saline solution it will be more likely to pass the ileocecal valve. In order to test the possible influence of saline solution in testing the ileocecal valve by means of the bismuth enema in a series of fifty colon injections, I added enough salt to the clyisma to equal normal saline solution. Comparing this series of cases with the fifty preceding and the fifty succeeding cases in which colon injections were made without salt, there was no difference in the frequency of ileocolic valve incompetencies. Several experiments were made in testing the influence of the composition of the enema. It was found that when barium sulphate, bismuth oxychlorid or bismuth subcarbonate was used in a gummy suspension in water, with or without saline solution, and in buttermilk suspension with or without the addition of salt, a constant proportion of cases, about 1 in 6, of ileocecal valve incompetency, was observed.

It seems to be a current opinion that rectal alimentation is, on the whole, unsatisfactory, although there are enough cases reported of successful rectal alimentation to warrant the continuance of the practice. In the light of our present knowledge concerning ileocecal valve incompetency, it seems to me reasonable to presume that those cases in which rectal alimentation has proved successful are instances of ileocecal valve incompetency.

8. To me one of the strongest evidences in favor of the normal competency of the ileocolic valve is the fact that when it is incompetent, the competency may be restored by a simple surgical procedure. Kellogg, agreeing with me that the ileocolic valve incompetency must be an important factor in the production of ileac stasis, devised a simple but successful operation for restoring the competency of the ileocolic valve. I have already reported postoperative studies on more than one hundred cases in which this operation for restoration of the ileocolic valve competency has been performed. With only three or four exceptions, the Roentgen-ray diagnosis of ileocolic valve incompetency was confirmed at operation, and the valve competency was restored by the simple operation above mentioned. That the competency was restored was proved, not only by testing the valve *in situ* before the abdomen was closed, but later by roentgenologic tests. Although, in several instances, more than a year and a half had elapsed since the operation was performed, in only three or four cases out of the

hundred did subsequent roentgenoscopy find the valve incompetent.

The effect of the operation on the emptying-time of the ileum has also been tested by the bismuth meal, but thus far no evidence has been secured which would lead me to believe that the operation has caused the slightest interference with the passage of ingested food from the ileum into the colon. On the contrary, the emptying-time of the ileum, which before the operation was in every single instance prolonged, has been definitely shortened, nearly always within eight hours. Emphasis should be laid on the fact that the operation for repair of the incompetent valve has been done, in by far the majority of cases referred to, in connection with some other operation which required opening of the abdominal cavity.

In a few instances in which the ileocolic valve had appeared to be competent to the enema, at subsequent operation the competency of the valve appeared to be open to question, at least in relation to gas, since slight pressure on the cecum was found sufficient to cause a reflux into the ileum after the latter had been thoroughly emptied. In accounting for these cases, I have borne in mind the experimental evidence submitted by Ziemssen, who found that, under deep chloroform anesthesia, the resistance of the valve to reflux from the colon was decreased and fluid could be forced into the small intestine. I have, therefore, assumed that, in these cases, the valve itself was really incompetent, even at the time of the enema; but with the patient awake and the bowel tone normal, the activity of the sphincteric mechanism was sufficient to prevent a reflux from the cecum into the small intestine, even though the valve lips did not closely approximate. Further, at operation, the test of the valve competency is usually made with gas and not fluid. The experiments of Senn and others would indicate that one can overcome the competency of the ileocolic valve more easily with air than with fluid, especially when the patient is anesthetized.

9. Another significant observation is made in connection with surgical operation in cases in which ileocolic valve incompetency has been demonstrated roentgenologically. At operation the surgeon often finds the small bowel filled with gas to a very disturbing degree in spite of the careful preoperative preparation, whereas in cases in which the valve is competent the small intestine is collapsed.

10. Still another evidence of normal valve competency is found in the fact that it is possible in the operation of ileosigmoidostomy to construct an artificial ileocolic valve which will stand the test of postoperative roentgenologic studies. The operation does not differ from the ordinary end-to-side anastomosis except that there is a distance of 2 or 3 cm. measured along the surface of the ileum, between the inner and the outer suture-lines. The result is an inversion of the ileum into the colon for about half an inch, forming a circular valve-like fold, which acts as an efficient valve. I have made such postoperative studies in twelve patients thus operated on by Kellogg in which roentgenoscopic tests have proved the competency of the artificial ileocolic valve.

11. At operation, cases of ileocecal valve incompetency show definite deviations from the normal anatomic structure. The crease marking the normal invagination is obliterated; the ileum is pulled out of its cecal pocket; the last inch or two is dilated into a trumpet-shaped sac, which Kellogg has found at

operation to have a diameter of from 5 to 7 cm. instead of the normal 3 cm. Kellogg has also called attention to a thinning of the walls of the terminal ileum often seen in marked cases of stasis.

12. Post-mortem studies show a great predominance of competent valves. Surely the only function persisting in the cadaver is a mechanical action, yet Kraus in one hundred and fifty necropsies after death from various causes, found the ileocolic valve competent in all but twelve. The reports of a few other pathologists who have published their observations, agree closely with this statement.

In the foregoing pages evidence is cited which, it seems to me, demonstrates the fact that the ileocecal valve is normally competent and that the competency is due to an action of the valve lips which is largely, if not entirely, mechanical. This evidence may be summarized as follows:

1. The ileocecal valve is almost universally present in vertebrate animals; and, at least, in the dog, pig, and cat, the valve is competent to the enema, withstanding enormous distention of the colon by fluid and gas.

2. By means of a string passed through the alimentary canal traction may be made on the valve lips, producing temporary incompetency.

3. In about one-sixth of three thousand persons, most of them constipated and all suffering from gastro-intestinal disturbances, the bismuth enema passed the ileocecal valve and filled the terminal ileum for varying distances.

4. The valve incompetency thus determined is a constant phenomenon in those cases.

5. Patients with incompetency of the ileocecal valve describe characteristic disagreeable symptoms apparently due to passage of the enema into the small intestine.

6. In the marked cases there is also observed a reflux of ingested bismuth from the colon back into the ileum.

7. The occurrence of the incompetency is, to a large degree at least, independent of the temperature or composition of the opaque enema.

8. The incompetent ileocolic valve may be restored to competency by a simple surgical procedure, the competency persisting in some cases at least a year and a half.

9. In operation on patients with incompetent ileocolic valve the small bowel is found filled with gas to a very disturbing degree.

10. It is possible in the operation of ileosigmoidostomy to construct an efficient artificial ileocolic valve which will successfully act as a barrier against reflux from the colon.

11. Definite deviations from the normal anatomic structure are found at operation on cases of ileocecal valve incompetency.

12. Post-mortem studies show the ileocolic valve to be competent in the great majority of cases.

ABSTRACT OF DISCUSSION

DR. LEWIS GREGORY COLE, New York: In 1902 I first recognized a case of ileocecal insufficiency. Since then I have observed it in about the same proportion of cases that Dr. Case has reported. It occurs in varying degrees. In some cases it will only ascend about 6 inches, and in others will extend all the way through the intestines to the pyloric sphincter. Therefore, there can be no doubt that ileocecal insufficiency occurs frequently. The important question is

whether or not it is pathologic. I have tried all kinds of arguments to interest surgeons and physicians in this subject, but the most effective is to ask whether or not they would expect symptoms if they were habitually fed the contents of their colon, even though it were administered through a stomach-tube. When the putrid feces from the colon pass into the small intestine, which is relatively sterile and composed of a highly absorbing membrane, one would certainly expect symptoms.

DR. WALTER B. CANNON, Boston: Dr. Case's work has interested me particularly because of earlier work which was done on lower animals. Attempts were made repeatedly in animals to press the material back into the small intestine from the colon, and in spite of repeated pressure it was impossible to cause this material to return to the small intestine once it had got through the ileocolic valve. Nevertheless, in a paper on some work done in 1901, it was shown that material injected into the colon might go back into the small intestine, and roentgenograms were taken at that time showing material, introduced into the large intestine through the rectum, that had gone back and filled a considerable part of the small intestine. The most significant part of the work, which Dr. Case has reported was that in which he noted that material which had normally passed from the small intestine into the large, so that the small intestine was quite free, was found later back in the small intestine. This observation seems to offer strong opposition to the argument that material coming normally through the small intestine into the colon is different from that introduced per rectum and, therefore, is treated by the ileocolic valve differently from injected material. The mechanism of the return to the small intestine is, I think, a rather interesting one. In lower animals there is naturally a backward movement by the reversed peristalsis or anastalsis of the colon. Does Dr. Case know the mode of this return in human beings? Of course there are well-known instances of attempts by surgeons to keep material from escaping through an opening in the cecum, by uniting the small intestine with the distal colon. The material continued to escape, thus indicating there may be a reverse movement of material through the large intestine. It seems possible, therefore, that sufficient pressure might be developed in the large intestine to carry this material back through the many loops of the small intestine.

PROF. A. J. CARLSON, Chicago: There are severe symptoms that we would expect to follow the injection of fecal matter into the stomach. Cats' or dogs' feces diluted to pass through a stomach-tube, of which material 100 c.c. was given each day or every other day for two or three months, has produced no results whatsoever in any of our cats as evidenced in the general metabolism or general behavior of the animals. Does this mean that the same result would be obtained in man? It is possible that fecal material coming into the small intestine from the large intestine without passing the stomach is more toxic than if introduced by the stomach.

DR. ALLAN C. EUSTIS, New Orleans: It is generally accepted that feces or even their extract are highly toxic when introduced into the body. Some stools are more toxic than others, depending on flora and mediums, and the body has the power of breaking up these poisons and rendering them inert. The liver is especially active in this respect, but the heart-muscle, uterus and even subcutaneous tissues also possess this power. Dale has shown that if parahydroxy-phenylethylamin is perfused through the liver of a dog, it is broken up and phenylacetic acid is formed. This amin, which is formed by the putrefaction of tyrosin, is capable of raising systolic blood-pressure from 110 to 260, when introduced into the vein of a dog, while a like action can be demonstrated in man. This protective power of the liver against intestinal poisons explains the apparent inconsistency in the anatomic and clinical findings in many cases of intestinal stasis. Patients with a very heavy indicanuria and evident intestinal stasis may present no subjective symptoms, owing to the fact that the intestinal poisons are detoxicated by the liver; on the other hand, some patients will have marked subjective symptoms with very little demonstrable abnormality of the gastro-

intestinal canal. It is the latter class of cases that are most readily handled along dietetic and hygienic lines, and to which I believe most of our cases of bronchial asthma belong. As I have shown in several communications, histidin on putrefaction yields a toxin which is capable of producing violent bronchial spasm, having been first discovered by Dale while seeking the active principle of ergot, and which he identified as beta-imidazolyethylamin. The lethal dose of this amin to a 300 gm. guinea-pig is 0.5 mg., intravenously. I have found that a 1 : 1000 solution of beta-imidazolyethylamin hydrochlorid, if macerated with the fresh liver of the turkey-buzzard (chosen because of its well-known resistance to putrid meat) and allowed to incubate at 37 degrees C. (98.6 F.) for four hours is non-toxic when introduced intravenously into a guinea-pig. Evidently, there is some ferment in the liver of the turkey-buzzard which is capable of splitting up this amin, for all precautions were taken for thorough asepsis, incubation was conducted under toluene, heat destroys the action and it does not take place in the cold. It may be assumed that the asthmatic individual has lost the power of detoxicating this particular amin, which is amply borne out by my clinical experience. Dr. Case has demonstrated that a patent ileocecal valve will cause intestinal stasis, and I do not think it was his intention to claim this anatomic variation as the cause in all cases, but I wish to impress the importance of considering the physiologic defences of the body to intestinal poisons before resorting to surgery to correct an anatomic abnormality.

DR. SEYMOUR BASCH, New York: Dr. Case in demonstrating his cases made a statement which I wish to controvert, namely, that this condition, unless remedied, is permanent. That is to say, in each patient in whom he finds incompetency of the ileocecal valve there is no spontaneous recovery. A patient was referred to me by a surgeon with a question of the necessity of an operation, because she had signs which pointed to some obstruction at the sigmoid flexure. In the course of our examination we gave the patient a colon enema and found she had a very long intestine low down in the pelvis, but no sign of any obstruction anywhere or ileocecal incompetency. This patient was placed on the usual anticonstipation coarse diet and treatment and massage was given the bowels and she has done very well. She has gained, in two years, over 20 pounds, her bowels are regular, and she feels well. In order to complete our study we gave her another colon enema two years later, and found that the muscles of her abdomen were competent to hold up the intestine. Just previous to that, however, I had heard Dr. Case at the County Medical Society in New York, and in going over the plates in my case I found that the second plate showed a marked incompetency of the ileocecal valve according to Dr. Case's outline. In the first plate no such thing appeared, but at the time of the second plate the patient was clinically very much better. We went over the case, but we found it impossible to understand just why a patient should show incompetency when clinically well and none at all during the height of her illness. It shows that we should not hurry our patients into an operation even if we find conditions that apparently point to surgical necessity. We should try common-sense measures first.

DR. E. C. ROSENOW, Chicago: Did any patients in whom Dr. Case noted incompetency of the ileocecal valve have arthritis deformans?

DR. GEORGE E. PFAHLER, Philadelphia: I have seen a number of cases in which arthritis deformans is associated with ileocecal valve incompetency.

DR. THOMAS A. GROOVER, Washington: Has Dr. Case any theories as to the cause of this condition? Is it congenital or acquired? Has he made any studies of infants to see if the condition is present in infancy? A large proportion of the cases which have presented this condition, in my experience, have been in those persons who have been in the habit of repeatedly taking large enemas with a great deal of pressure. Has he anything to say about this as a causative factor?

DR. J. T. CASE, Battle Creek, Mich.: The pathologic significance of ileac stasis due to ileocecal valve incompetency I

did not attempt to discuss at length here. I tried to confine my remarks to the one anatomic and physiologic question, whether or not the normal ileocecal valve was an efficient barrier against reflux from the ileum. The pathologic significance of ileal stasis is an intricate problem and many phases of it have been touched on. Without discussing whether or not indicanuria is a definite evidence of intestinal stasis, I may state that I have tabulated one hundred cases in which the ileocolic valve was found competent, and another hundred cases in which it was incompetent; one could see at a glance at the indicanuria values, which cases presented the condition under consideration. The patients with incompetent valve presented indicanuria in the majority of cases, whereas the patients in whom the valve was competent rarely showed a marked indicanuria. What I have tried to bring out is that the ileocecal valve can be rendered competent on the operating-table. An efficient competent valve can be made in ten minutes by the surgeon, and I consider that this fact tends to prove that the valve is normally competent. As Dr. Cannon has mentioned, one of the most convincing arguments as to the normal competency of the ileocecal valve is the fact that in a large number of cases I have observed a reflux of ingested food from the colon into the ileum. Antiperistalsis surely is an important factor in the production of stasis in the ileum, through incompetency of the valve. It is well known through Cannon's work that, in cases of obstruction in the distal colon, there is an exaggeration of the normal antiperistaltic influence in the proximal colon. This is exemplified in gangrene of the cecum recently seen in a case of malignant obstruction of the sigmoid colon. Exaggerated antiperistalsis is also seen very commonly associated with spasticity of the left half of the colon, especially the iliac and pelvic colon, with resulting functional hindrance to the onward peristalsis through that portion of the bowel. Most of our cases of ileocecal valve incompetency have been associated with chronic colonic stasis with spasticity and adhesions of the iliac and pelvic colon—what the Germans have called "spastic obstipation." I was much interested in Dr. Basch's case, and should like to know the details which must have been followed out in order to make sure that the test of the valve competency was a thorough-going one. In all our cases we have insisted on a rigid routine, including careful cleansing of the colon by repeated enemas two or three hours before the barium-enema test; careful massage over the ascending colon and cecum in the antiperistaltic direction during the injection of the enema; screen observations during the giving of the enema to make sure the cecum is well filled, and the employment of sufficient pressure to distend the cecum. I have never yet seen a case of incompetency in which the surgeons have not been able to demonstrate the incompetency at operation. I certainly agree most emphatically with what Dr. Basch has said about the importance of a thorough trial of non-surgical measures. Out of five hundred or more cases of incompetency of the ileocolic valve, only about one hundred have been operated on for repair of the valve, and many of these repairs were done in connection with other operations requiring abdominal section. There is a good field for further research in this matter in children's clinics. My observations on children have been limited to relatively few. As to the cases of arthritis, I can agree that I have seen a good many of them in which it seemed that the intestinal stasis was an important factor in the etiology.

Peril of Suggestion.—To make people feel better is not despicable. The danger lies in the fact that one is liable to be satisfied with making people feel well instead of making them be well. It should not be a great danger. We ought to be able to trust ourselves to diagnose scientifically and to treat rationally, even if we have an easy power of anesthesia. We do not give morphin in every case of pain; no more, then, would we dull every aching sensorium with suggestion. —*Med. Press and Circular.*

THE TREATMENT OF CHOLERA BY TRANSFUSION OF SALINE SOLUTION

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AND

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CANTON, CHINA

To the general physician practicing medicine in the United States, Asiatic cholera seems like one of those rare diseases only of academic interest. To one, however, who is practicing in an uncivilized and overcrowded city, this dread disease is a genuine reality.

Cholera had not appeared in Canton, except sporadically, for more than ten years; but in the summer of 1913 an epidemic of moderate extent and great severity spread over the city. The southern section was first affected and it was here that it first came under our notice among the patients of the John G. Kerr Hospital for the Insane. This institution is located on very low land, on the banks of a canal which runs through a large section of the city. This canal receives most of the drainage from the streets of this section of the city. On account of recent heavy rains the water of the river was higher than usual, and this of course affected the waters of the canal, causing them to flood the campus of the hospital during the high tide. To prevent the insane patients, who were at large within the compound, from drinking this water was impossible and thus the disease spread.

Specimens of the dejecta were sent to a Chinese bacteriologist who was trained in Hongkong and he demonstrated the presence of the specific spirillum of Asiatic cholera.

As indicated above, the disease was very virulent, many patients passing away but three or four hours after the onset of symptoms. Other patients lived for one or more days, dying of exhaustion or some later complication. The symptoms were quite typical, with an initial diarrhea becoming more profuse until the typical rice-water stools appeared. Prostration was extreme, passing into shock and death. In the more favorable cases there was reaction with return of body temperature and recovery or possibly death from renal complications.

The insane hospital being equipped only for the treatment of mental diseases, there were none of the ordinary facilities for the proper treatment of a disease such as cholera. The patients were isolated in a crude building known as a mat-shed. This building is made by erecting a framework of bamboo poles. The roof and sides are covered with the dried leaves of the fan palm. Rough and uneven thin boards are laid to make a floor. The shed was divided into two compartments by mats which were hung up in the middle. The men were placed on one side and the women on the other. There were no trained nurses of any kind, but only common workmen or coolies. It was therefore thought best not to put the patients on raised beds, but broad boards were laid on the floor and the patients were placed on these. It may be imagined how difficult was the attendance on patients thus placed on the floor. The liquid stools and the vomitus constantly being ejected by the patients ran off of the bedboards and so onto the floor where it escaped through the cracks between the boards to the ground below. The greatest number of patients under treatment in the mat-shed at any one time was fourteen, in all stages from that of beginning diarrhea to reaction or death. After reaction had occurred the patients

were removed to another and more substantial building.

At the beginning of the epidemic, subcutaneous injections of saline solution were administered with little if any effect. Later, apparatus for giving intravenous transfusions was obtained, and this method of administering saline solution was employed in all but the very mildest cases. The materials used for the operation were unrefined raw salt, needle used for giving antitoxin injections, tin dipper, enamel-ware funnel, rubber tubing, brass tin holding over 2 pints (used for giving enemas ordinarily), native iron rice-pot, and 5-gallon kerosene tin.

The salt was dissolved in river-water or cistern-water, a solution of about 0.65 per cent. being employed. This was boiled on the Chinese wind lamp in the kerosene tin or the iron pot for not less than fifteen minutes. A rather heavy muddy precipitate formed during the boiling and continued to form while cooling. When ready for use this solution was again warmed or mixed with a hot solution to bring it to the proper temperature. It was then filtered by placing a plug of sterile cotton in the neck of the funnel.

On account of the lack of trained assistants and because of the fact that the patients were almost all demented, tossing about on the floor, there were many difficulties encountered while transfusing several pints of liquid into each patient. The filtered saline solution was placed in the brass can which was attached to an upright pole. The air was expelled from the attached rubber tube. Not far from the needle end this tube was interrupted by inserting a short piece of glass tubing. In this way the shorter rubber tube with cannula attached could be separately boiled for each patient.

There was no adequate means of boiling the instruments, which were simply dipped into a solution of camphor and phenol (carbolic acid). A strong solution of compound solution of cresol was kept at hand and the operators' hands were frequently dipped into this. The first transfusion was usually given in the veins of the left arm and subsequent injections were made into the veins of the right arm, foot or leg. By raising and lowering the tin the rate of flow could be regulated with considerable accuracy and the temperature of the water emerging from the cannula increased or lowered. The temperature was as a rule, however, altered by adding more cold or hot solution to that already in the tin. By using a long rubber tubing the temperature could be maintained at about 70 C. (153 F.) so that by the time it reached the vein it was at the proper temperature. It was noted that by pressure on the skin, immediately over the point of the cannula, one could readily feel the solution running into the vein, and this was of great assistance in determining the rate of flow.

The amount of solution administered to any one patient varied from 6 to 10 liters (quarts). During the transfusion the patients were as carefully watched as circumstances permitted. As a rule the injection was continued until the flow of water from mouth and rectum indicated the saturation of the circulatory system. By this time the pulse would be full, all muscular cramps would have ceased and the patient would express himself as feeling comparatively comfortable. Not infrequently before the transfusion was completed the patient was seized with a severe chill lasting from fifteen minutes to half an hour. Some patients

were filled with fluid even beyond their normal body-weight without any signs of discomfort or embarrassment to pulse or respiration. In spite of the crude methods of performing the operation, there was no evidence in any case of septicemia, and no symptoms arising from the entrance of air into the veins were observed, although the strictest precautions against this contingency were not always observed.

Except for the transfusion of saline solution there was practically no treatment given to the patients besides the administration of dilute sulphuric acid, after the period of shock had passed and vomiting had ceased. Then milk was cautiously given at first, followed later by congee and soups. Cases of uremia, the most fatal of the complications, were treated with diuretics. Some of the violently insane were covered with blankets and placed in a cage. They were placed on a brick pavement exposed to the direct rays of the sun. The head was carefully shaded with an umbrella or screen. The hot August sun of Canton proved to be quite sufficient to cause a profuse sweat.

The accompanying tables were prepared by Dr. Hofmann, showing the results of treatment of the insane patients at the John G. Kerr Refuge during the epidemic of 1913.

TABLE 1.—RESULTS OF TREATMENT OF INSANE PATIENTS

Hospital No.	Sex	Age	No. of Transfusions	Mental Diagnosis	Result
2561	♂	42	1	General paresis	Recovery
2542	♂	25	1	Depression?	Recovery
1899	♂	24	1	Dementia praecox (hebephrenic)	Recovery
2572	♂	38	1	Dementia praecox (hebephrenic)	Recovery
619	♂	23	1	Epilepsy (imbecile)	Recovery
2036	♂	36	1	Dementia praecox (hebephrenic)	Recovery
2647	♂	30	1	Dementia praecox (hebephrenic)	Recovery
941	♂	38	2	Dementia praecox (hebephrenic)	Recovery
1699	♂	33	2	Dementia praecox (hebephrenic)	Recovery
2112	♂	43	3	Not diagnosed	Recovery
					Recovered (died later of dysentery)
2620	♂	18	1	Manic depressive (manic)	Recovery
2600	♂	26	1	Manic depressive (manic)	Recovery
1969	♂	40	1	Manic depressive (manic)	Recovery
2406	♂	28	1	Dementia praecox (hebephrenic)	Recovery
2327	♂	24	1	Manic depressive (manic)	Recovery
2381	♂	48	1	Manic depressive (manic)	Recovery
1842	♂	23	2	Manic depressive (manic)	Recovery
2373	♂	17	2	Dementia praecox	Recovery
1707	♂	60	3	Senility	Recovery
Servant	♂	40	2	Sane	Recovery
2670	♂	40	2	General paresis	Recovery
2635	♂	39	2	Exhaustive psychosis	Death
1499	♂	50	2	Dementia praecox (catatonic)	Death
1765	♂	45	2	Alcoholic insanity	Death
2652	♂	50	4	Melancholia	Death
2537	♂	25	2	Manic depressive insanity	Death
2499	♂	28	2	Manic depressive insanity	Death
2625	♂	30	0	Dementia praecox (hebephrenic)	Death
2611	♂	33	0	Epilepsy	Recovery
2134	♂	50	0	General paresis	Recovery
2652	♂	37	0	General paresis	Recovery
1437	♂	40	0	Dementia praecox (hebephrenic)	Recovery
2311	♂	20	0	Dementia praecox (hebephrenic)	Recovery
2123	♂	23	0	Dementia praecox (hebephrenic)	Recovery
1549	♂	46	0	General paresis	Death
1700	♂	12	0	Idiocy	Death
2616	♂	25	0	Dementia praecox (hebephrenic)	Death
2570	♂	45	0	Involuntary melancholia	Death
2129	♂	40	0	General paresis	Death
1610	♂	40	0	Dementia praecox (hebephrenic)	Death
2005	♂	40	0	Dementia praecox (hebephrenic)	Death
2018	♂	40	0	Manic depressive (manic)	Death
2046	♂	27	0	Dementia praecox (hebephrenic)	Death
1725	♂	50	0	Senility	Death

* In this column ♂ indicates male and ♀ female.

Of the men who were transfused and died, one was an alcoholic aged 45, one a dementia praecox patient aged 50. In both of these cases death was caused by collapse. A second transfusion was given but was too late, the delay being caused by a severe typhoon and the flooding of the compound. Another patient, aged

39, suffered from exhaustive psychosis, and was very weak. He died of exhaustion without symptoms of uremia, fever or collapse. Another patient, aged 40, was in the last stages of general paresis. He lived for ten days and had no signs of uremia, fever or collapse.

Of the women who died and were transfused, one, aged 40, had melancholia. She was transfused four times but died of uremia on the fifth day. One had

TABLE 2.—SUMMARY OF ALL CHOLERA CASES UNDER TREATMENT

	Recovered		Died		Total
	Male	Female	Male	Female	Cases
Transfused	10	10	4	3	27
Not transfused....	5	1	8	3	17
Grand totals.....	15	11	12	6	44

Thus of the twenty-seven patients who were transfused, 74 per cent. recovered and 26 per cent. died. Of the seventeen patients who were not transfused 35 per cent. recovered and 65 per cent. died. Some of these non-transfused cases were purposely not transfused because of the mild nature of the attack.

manic depressive insanity of the manic type. She was aged 25, received two transfusions and died of uremia on the fifth day. A third patient, aged 28, had manic depressive insanity of the depressive type, and died of uremia on the fourth day in spite of two transfusions.

The epidemic of cholera was pretty general throughout Canton, and a number of cases were seen in various parts of the city. The treatment of these patients was more carefully carried out because of better facilities. The treatment recommended by Leonard Rogers of India was followed closely. A sphygmomanometer was found of great service, the Nicholson instrument being employed. If the blood-pressure fell below 70 mm. and the pulse became feeble, further infusions of saline solution were indicated. If in spite of treatment the pressure continued below 95 mm. and the action of the kidneys was scant, a fatal prognosis was justifiable.

CASE 1.—Mr. P. L. Y., teacher, aged 25. Symptoms of cholera developed on a Sunday night. At 2 a. m. severe diarrhea and vomiting had set in. Chinese remedies were administered until early Tuesday morning. At that time the patient was seen for the first time. Pulse at the wrist was not palpable. There were severe cramps in the muscles of the legs, and the patient was semiconscious with frequent evacuations from the bowels and mouth. About 3 pints of normal saline solution were administered in the left arm and a nurse was placed in charge of the patient. High enemas of normal saline solution were given every two to four hours. Potassium permanganate solution was given freely as a beverage (0.2 to 0.3 gm. to 500 c.c. of water). On Wednesday no urine was voided, but the vomiting ceased and the stools became of firmer consistency and of a greenish color (the effect of the large draughts of permanganate). Saline solution was again given in the vein of the leg. On Thursday a few drops of urine were voided. Saline solution was again given intravenously, but the blood-pressure failed to be maintained. Cups were applied to the loins but the patient gradually became uremic, another transfusion was without avail, and death occurred early Friday morning.

CASE 2.—Man, aged 28, brought to the Kung Ye Hospital five or six hours after the onset of diarrhea and vomiting. The pulse was very feeble but perceptible. Four pints of normal saline solution were injected intravenously. There ensued a very violent chill lasting over half an hour. The patient got up and walked out to his sedan-chair thinking

apparently that he was about to die. Permanganate solution was prescribed. The chill continued for some time after the patient had left the hospital. The next morning, seen at his home, the patient still had some diarrhea, there was no vomiting and the blood-pressure was over 100 mm. Rectal enemas were prescribed. The last visit was made four days later. Stools were normal and there was free excretion of urine and the patient had a fair appetite.

CASE 3.—Man, aged 21, student at the Kung Ye Medical College. Patient had two loose stools following his mid-day meal. At 4 p. m. he vomited. He was first seen at 8 p. m. with persistent vomiting and but little prostration. Bismuth was given by mouth. At 12:30 a. m. the vomiting persisted and there was a diarrhea with rice-water stools. The pulse was very feeble but palpable. Normal saline solution, about 2 pints, was administered intravenously, until there was considerable oppression in the region of the heart. After half an hour there was a severe chill lasting for an hour. Permanganate solution was given. Patient remained in the hospital four or five days. Recovery was uneventful.

CASE 4.—Mrs. K., aged 24, was taken ill at 4 p. m. with severe vomiting and diarrhea. She was brought to the Kung Ye Hospital the next day at 2 p. m.; the pulse was very weak. Saline solution was administered intravenously. She was not seen again but was reported to have recovered three days later.

A number of other patients were seen either in their homes or in the hospital. One was brought to the hospital *in extremis*. No treatment was given. Several patients were seen in their homes, cyanosed, extremities cold, pulse impalpable and patient semiconscious. All these died a few hours after they were seen.

Canton Christian College—John G. Kerr Hospital for the Insane.

DUODENAL ULCER*

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AND

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BUFFALO

In an article on perforating duodenal ulcer, in which he advises gastro-enterostomy in all cases of perforation, Deaver¹ says in conclusion:

While gastro-enterostomy does not compare in importance with closure of the perforation in gastric or duodenal ulcers, it is nevertheless a factor of first magnitude in the immediate cure and ultimate result.

Ochsner, Mayo, Coffey, MacKenzie, Babcock and Sutton, who took part in the discussion, differ in certain particulars, but for the most part agree with Deaver's conclusion. This position was so contrary to our experience of about twenty cases, some of which have been reported,² that we determined on an experimental investigation of the subject.

At first thought an almost unsurmountable difficulty is presented, namely, to produce a chronic ulcer in the animal. On further consideration, however, if it be impossible to produce contraction in a normal duodenum no matter how much is excised, the production of an ulcer need not enter into the problem. In other words, if it be impossible to produce stricture of the duodenum without ulceration, then if the ulcer is excised, leaving nothing but normal tissue in

closing the duodenum, the stricture is impossible. This work of course applies only to the acute perforations, not to the chronic ones with a large mass of indurated tissues around them.

The first work of this kind of which we have found any record is that done by Dr. Elliott of New York. In his work he used cats, and was unable to produce stricture regardless of the amount of tissue excised. In our work we used dogs, which were better, but not ideal, because of the thickness of the duodenum. A number of experiments were done, one of which is selected as illustrative.

Dog 6.—Weight, 18 pounds. Operation, Oct. 31, 1913. Dr. J. L. Butsch, assisted by Dr. John Evans. Under morphin and ether anesthesia the duodenum was exposed and a strip 3.5 by 1.5 cm. in size was removed, just beyond the pylorus. When closed only the finest probe could be passed through the lumen. The animal recovered, and was able to eat the usual food without difficulty. Three weeks later the abdomen was reopened, and while the duodenum was still contracted, it had increased to one-third its normal size. March 23, 1914 (142 days after the first operation) the abdomen was again opened and the specimen removed. The lumen of the duodenum was about two-thirds its normal size.

This experiment is fairly typical of all the others, although several complications were more or less frequent. A few dogs died from peritonitis. In nearly all, the omentum was more or less adherent to the duodenum. Many of the animals lost weight, although there was no vomiting in any of them.

As a result of this work, we began to suspect that it was impossible to produce a stricture of any tubular passage in the body, without ulceration. We tried it out in the ileum, and found that almost invariably obstruction took place from outside the lumen, because of the omentum becoming adherent.

Dog 22.—Weight, 25 pounds. Operation, Dec. 9, 1913. Dr. Butsch and Dr. Evans. Under ether anesthesia the duodenum was exposed, and 5 by 2 cm. was excised. Necropsy Dec. 25, 1913. Many adhesions were found between the intestine and omentum, and almost complete obstruction was present. The intestine was dilated proximal to the operative field. In other experiments we found it impossible to prevent this complication.

In all the dogs operated on, we were unable to produce permanent contraction of the duodenum. This we believe to be fairly conclusive evidence, that if one excises the ulcer, accurate closure of normal tissues cannot produce permanent obstruction. From this experimental work, we would offer the following suggestions.

1. It is impossible to produce obstruction in a dog, no matter how much of the wall is excised.

2. Probably it is impossible to produce obstruction to any tubular passage excepting by the contraction of scar tissue, or adhesions outside of the lumen.

3. Gastro-enterostomy is contra-indicated in acute perforating ulcers, when the ulcer can be readily excised, because if excision of all scar tissue is thoroughly done, a stricture cannot occur.

4. Clinically we have practiced excision of the ulcer in all cases of perforating duodenal ulcer, without gastro-enterostomy, and in no case has obstruction occurred.

5. While the lumen is not restored to its full size in dogs, the character of the human intestine is such that we believe complete restoration ultimately does ensue.

430 Delaware Avenue.

* This work was done in the Experimental Laboratory of the University of Buffalo.

1. Deaver, John B.: Posterior Gastrojejunostomy in Acute Perforative Ulcer of the Stomach and Duodenum, THE JOURNAL A. M. A., July 12, 1913, p. 75.
2. McGuire, Edgar R.: Buffalo Med. Jour., June 2, 1912.

THE DUCK AS A PREVENTIVE AGAINST
MALARIA AND YELLOW FEVER

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PHILADELPHIA

The duck is one of the greatest known enemies of the mosquito, and therefore of yellow fever and malaria. It has possibly one of the widest geographical ranges of any of the birds. It is even found in the Arctic and Antarctic regions; also in Australia, where bird life is so peculiar.

After trying the ability of fish to devour larvae and pupae of mosquitoes, with varied success, I built two dams near together on the same stream, so that each would have the same environment for the breeding of mosquitoes. Each covered nearly 1,400 square feet. In one, twenty mallard ducks, *Anas platyrhynchos*, were permitted to feed, while the other was entirely protected from water fowl, but well stocked with goldfish, *Carassius auratus*, variety *americanus*.

The one in which the ducks fed was for several months entirely free from mosquitoes, while the pond protected from ducks and stocked with fish was swarming with young insects in different cycles of life.

To the infested pond ten well-fed mallard ducks, *Anas platyrhynchos*, were then admitted, and as they entered the pond they were first attracted by the larval bactrachians, tadpoles. They, however, soon recognized the presence of larvae and pupae of the mosquito and immediately turned their attention to these, ravenously devouring them in preference to any other foodstuff present. At the end of twenty-four hours no pupae were to be found and in forty-eight hours only a few small larvae survived. The motion of the water, made by the ducks, of course drowned some of the insects—what proportion cannot be estimated.

For some years I have been using ducks to keep down mosquitoes in swamps that would have been very expensive to drain, but I never fully appreciated the high degree of efficiency of the duck as a destroyer of mosquito life until the foregoing test was made.

In the work of Howard, Dyar and Knab, entitled "Mosquitoes of North and Central America and the West Indies," will be found¹ an essay on the destruction of the mosquito and house-fly by Mr. William Beutenmueller, who expresses the opinion that aquatic birds could be used for the purpose of destroying mosquito larvae.

Mr. William Lockwood of Boston, an artist, who made a hobby of raising aquatic fowl, also expresses an opinion that the spoonbilled duck is particularly adapted to the destruction of mosquito larvae resting on the surface of the water.

Mr. McAtee of the Biological Survey found mosquitoes in the gizzard of the mallard duck. While other birds, fish, spiders, bactrachians, arthropods and reptiles are all enemies of the mosquito, none of them have the wide geographical range and the capacity of devouring large numbers of the larvae and pupae on land and water as the duck.

Ducks can be used in ponds, swamps, both open and in jungles, and can be driven from place to place. Not only can they be generally used to keep down mosquito life but they also furnish a delicious and valuable foodstuff.

THE SUCCESSFUL ISOLATION OF ERGOTININ CRYSTALS FROM CERTAIN
ORGANS IN A CASE OF ACUTE
ERGOT POISONING*JACOB ROSENBLOOM, M.D., PH.D., AND
CHARLES B. SCHILDECKER, M.D.

PITTSBURGH

We report the first successful isolation of an alkaloid of ergot from the organs in a case of acute ergotism. Hitherto the toxicologist had to rely on the physical properties of this fungus for its identification. Therefore, in those cases in which pharmaceutical preparations of the fungus have been used, it has been impossible to identify the drug. Dragendorff,¹ for example, found it impossible to identify ergot by the isolation of any of its constituents from animal tissues. Blythe² says that "there has been no experience in the separation of the constituents of ergot from the organs of the body, [but] an attempt might be made by Dragendorff's process, but success is doubtful." Mann³ states that "it is practically impossible to separate ergot from the tissues so as to identify it." We, however, have been successful in isolating "ergotinin" by the use of Dragendorff's process.

Thanks to George Barger and his collaborators, our knowledge of the alkaloids of ergot is rapidly becoming complete.⁴

We were recently called to perform a necropsy in a case of sudden death under suspicious circumstances. Through the kindness of the attending physicians, Drs. J. H. Love and J. C. Edgar, we are able to give the following history of the case:

Dr. Love was called on the twelfth of the month to attend a young girl who suddenly became ill, about one hour after supper. He found her cyanotic, with rapid pulse, and she had vomited about two quarts of material looking like food remnants. After stimulation the patient recovered and he thought she had suffered from an acute gastritis.⁵ Eleven days later, about the same time in the evening, he was called to attend the same girl, and found her in a serious condition. She was unconscious, had no control of the bowels, and the urine was suppressed. Clonic convulsions occurred and on palpation of the abdomen he could feel the uterus contracting. This contraction was also noted visually. The stools were bloody and contained pieces of the mucous membrane of the intestine. Nine hours before death the temperature rose to 103 F., and nineteen hours after he was first called the patient died without regaining consciousness.

On necropsy a pregnancy was found and the whole gastroenteric tract was the seat of an intense inflammation. The mucous membrane of the small and large intestines was covered with a layer of blood, and the membrane was full of punctate hemorrhages. The kidneys, stomach, small and

* From the Biochemical Laboratory of the Western Pennsylvania Hospital.

1. Dragendorff: *Ermittlung von Giften*, Göttingen, 1895, p. 294.

2. Blythe: *Poisons, Their Effects and Detection*, London, 1906, p. 465.

3. Mann: *Forensic Medicine and Toxicology*, Philadelphia, 1893, p. 599.

4. For Description and History of the Alkaloids of Ergot see the following:

Henry: *The Alkaloids*, Philadelphia, 1913, p. 383.

Barger, in *Allen's Commercial Organic Analysis*, Philadelphia, 1913, vii, 16.

Barger and Dale: *Biochem. Jour.*, 1907, ii, 240.

Active Principles of Ergot, editorial, *THE JOURNAL A. M. A.*, June 20, 1914, p. 1969.

5. For reports of cases of acute ergot poisoning see:

Davidson: *Lancet*, London, 1882, ii, 526.

Oldright: *Canadian Med. Jour.*, 1870, vi, 404.

Meadows: *Med. Times and Gaz.*, 1879, ii, 397.

Hulme: *Med. News*, 1877, li, 538.

Debierre: *Bull. de therap.*, cvi, 52.

1. Howard, L. O.; Dyar, H. G., and Knab, Frederick: *Mosquitoes of North and Central America and the West Indies*, Washington, Carnegie Institution, 1913, 1, 178.

large intestines, and liver were taken for toxicologic examination.

Portions of these organs were examined for poison by Dragendorff's process as described by Witthaus.⁶ It was found that the residue left by chloroform from an acid solution of the extract of these organs (Residue 3) was of a crystalline nature. The residue obtained by the extraction of the acid aqueous liquid with ether (Residue 4) was also crystalline.⁷ These crystals⁸ of both the residues were of the shape of long needles, the sides of which were not quite parallel and the ends replaced by a pair of faces. These crystals were readily soluble in chloroform, dissolved in acetone, and were sparingly soluble in ether and also in alcohol. A precipitate was obtained with Mayer's reagent and with iodine solution. When dissolved in ether and a few drops of sulphuric acid was added a transient orange color formed, changing to blue. A solution in sulphuric acid on addition of dry ferric chlorid gave an orange tint changing to crimson, green and blue. When placed in a bath previously heated to 210, they melted at 231.

Prof. George Barger of England was kind enough to send us preparations of ergotin prepared by himself. On comparing these crystals with those which we obtained from certain organs in this case of acute ergot poisoning, we have found them to agree in all particulars.

5737 Forbes Street—Park Building.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. THEIR ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT AND IN PART ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS ARE ASKED FOR TO AID IN THE REVISION OF THE MATTER BEFORE PUBLICATION IN THE BOOK "NEW AND NONOFFICIAL REMEDIES."

THE COUNCIL DESIRES PHYSICIANS TO UNDERSTAND THAT THE ACCEPTANCE OF AN ARTICLE DOES NOT NECESSARILY MEAN A RECOMMENDATION, BUT THAT, SO FAR AS KNOWN, IT COMPLIES WITH THE RULES ADOPTED BY THE COUNCIL.

W. A. PUCKNER, SECRETARY.

DOSAGE FORMS OF ACCEPTED ARTICLES.—The following dosage forms of accepted articles have been accepted for inclusion with New and Nonofficial Remedies:

Hypodermic Tablets of Emetine Hydrochloride, Mulford.—Each tablet contains emetine hydrochloride, 0.016 Gm. Prepared by H. K. Mulford Co., Philadelphia.

ACNE VACCINE.—(See N. N. R., 1914, p. 246).
E. R. Squibb and Sons, New York.

Acne Vaccine.—Marketed in boxes of 4 syringes containing 25, 50, 100 and 200 million killed bacilli. Also in boxes of 2 syringes containing 50 and 200 million killed bacilli; boxes of 6 ampoules containing 10, 25, 50, 100, 200 and 500 million killed bacilli, with a syringe; and boxes of 2 ampoules containing 50 and 200 million killed bacilli, with a syringe.

BACILLUS COLI VACCINE.—(See N. N. R., 1914, p. 247).
E. R. Squibb and Sons, New York.

Bacillus Coli Communis Vaccine.—Marketed in boxes of 4 syringes containing 100, 200, 500 and 1,000 million killed bacilli. Also boxes of 2 syringes containing 100 and 500 million killed bacilli and boxes of 2 ampoules containing 100 and 500 million killed bacilli, with a syringe.

6. Witthaus and Becker: *Medical Jurisprudence, Forensic Medicine and Toxicology*, New York, 1911, iv, 157.

7. In his description of Dragendorff's process, Witthaus mentions that ergotin may appear in traces in Residue 3, and that the larger portion would be found in Residue 4.

8. The crystals in Residue 3 were tinged with a yellow color, while those in Residue 4 were colorless.

BACILLUS OF BORDET-GENGOU VACCINE.—(See N. N. R., 1914, p. 247).

E. R. Squibb and Sons, New York.

Bacillus Pertussis Vaccine.—Marketed in boxes of 4 syringes containing 25, 50, 100 and 200 million killed bacilli. Also boxes of 2 syringes containing 50 and 200 million killed bacilli; boxes of 6 ampoules containing 25, 50, 100, 200, 300 and 500 million killed bacilli, with a syringe; and boxes of 2 ampoules containing 50 and 200 million killed bacilli, with a syringe.

BACILLUS PYOCYANEUS VACCINE.—(See N. N. R., 1914, p. 249).

E. R. Squibb and Sons, New York.

Pyocyanus Vaccine.—Marketed in boxes of 4 syringes containing 100, 200, 500 and 1,000 million killed bacilli. Also in boxes of 2 syringes containing 100 and 500 million killed bacilli.

GNOCOCCUS VACCINE.—(See N. N. R., 1914, p. 250).
E. R. Squibb and Sons, New York.

Gonococcus Vaccine.—Marketed in boxes of 4 syringes containing 100, 200, 350 and 500 million killed gonococci. Also in boxes of 2 syringes containing 100 and 500 million killed gonococci; boxes of 6 ampoules containing 50, 100, 150, 350, 500 and 1,000 million killed gonococci, with a syringe; and boxes of 2 ampoules containing 100 and 500 million killed gonococci, with a syringe.

Therapeutics

PREVENTION IS GREATER THAN CURE

(Continued from page 1113)

II

HEAT AND INFANTS

The death-rate from diarrheal diseases is twice as great in summer as in winter. Short-lived high temperature may cause some heat deaths of infants, but does not much affect the death-rate from gastrointestinal disturbances, unless it should cause an unfavorable turn during an acute attack of the trouble. On the other hand, continued excessive heat does cause an increase in the death-rate from diarrheal diseases in infants, although the heat alone is not the only factor. Germs that cause intestinal disturbances seem to grow better in hot weather, although hot weather, if causing an increased temperature in the child, seems to lower the tolerance to starchy foods.¹

Hence the prevention of these disturbances and the saving of life will be caused by shady verandas, roof-gardens, trees, parks, seashore resorts and cool evening country air.

Previous knowledge has recently been confirmed² that more than one-half of the deaths of children under 1 year of age are due to disorders of nutrition, and about 75 per cent. of these deaths occur during the first three months of life. These statistical facts, together with the disturbances caused by the heat of summer, emphasize the advisability, if not the necessity, of a mother nursing her baby during the first year of its life, as the mother's milk is ordinarily the safest food that the child can receive.

INFANT AND SCHOOL HYGIENE

Success in the work which this heading represents has been shown by the splendid reduction of deaths in young children in cities properly utilizing the knowledge of medical science and sanitation which we now possess. In some cities there has been a diminution of more than two-thirds of the deaths from contagious

1. Zahorsky, J.: *Am. Jour. Dis. Child.*, November, 1913, p. 318.
2. Supplement 16, U. S. Pub. Health Rep., June 19, 1914.

diseases and of more than one-third of the deaths from diarrheal and respiratory diseases of young children.

The foundation of these splendid results, which should be studied and inaugurated in all communities, are: measures for the purification and proper refrigeration of milk; instruction in the proper preparation of milk as a food for infants; the house visits of trained nurses; the babies' aid, and mothers' aid societies; school inspection; school hygiene (good light, aided by the proper color tints of walls and ceilings, proper desks and chairs, rest and exercise periods); play-grounds; open-air schools; segregation of defective from normal children, etc.

It is not the purpose in these articles to discuss in detail these great problems, but only to suggest that those interested, and those who should be interested on account of their official positions, should read and study the statistics already published. It is desired to urge the necessity of careful, skilled school inspection and to urge on school boards that proper light saves eyes; that proper desks and chairs prevent scoliosis and other deformities; that good ventilation prevents respiratory troubles; that clean books, pencils, desks and chairs prevent eye, nose and throat inflammations, to say nothing of the contagious diseases; that proper rest periods save the child's brain from tire; that good, well-paid teachers promote education with a minimum amount of brain fatigue in the child and cause the child to cooperate with, and not combat, the instruction offered. Also, means must be inaugurated to feed underfed children.

The necessity of school inspection is readily shown by quoting Allport's³ figures, viz.:

There are in the public schools in this country 20 million children, and 75 per cent. of these are suffering from some defect that can be cured, or at least ameliorated; 500,000 of these children have heart lesions; 1,000,000 have spinal curvature or other defect; 1,000,000 have tuberculosis; 1,000,000 have defective hearing; 5,000,000, or 25 per cent., have defective vision; 5,000,000, or 25 per cent., are underfed or wrongly fed; 6,000,000, about 30 per cent., need operations on the tonsils or adenoids, and 10,000,000, or 50 per cent., have defective teeth.

Skilled school inspection probably reduces the deaths from contagious disease by 50 per cent., and perhaps the total number of contagious-disease cases by 75 or 80 per cent. Also, the improved hygiene of schools and the improvement in health caused by the correction of defects discovered by medical inspection must greatly reduce the instances of contagious disease.

The value of regulated and supervised calisthenic exercises for schoolchildren is great. These should teach correct standing, correct walking, correct breathing and such muscle exercises as will develop all parts of the body symmetrically. Dancing under a skilled teacher is valuable exercise, if not too long continued, or if it does not add one more preventive of the child's enjoying good out-door play and walks.

The dance craze of this age is deplorable. The harm done sexually, neurotically and physically to youth and young adults is terrible to contemplate. The harm done to old men and women is ridiculously unnecessary.

Skilled, corrective muscle exercises to remedy defects in deformed children are necessary to prevent

the deformity becoming permanent, and it is a crime to neglect such treatment.

More detailed suggestions for school inspection will be presented later.

AIR

There has been a good deal of misunderstanding as to what constitutes impure air. There is always in the ordinary respired air of buildings and houses too little carbonic acid gas to do any harm to an individual. Also, a varying content of oxygen, within ordinary limits, is not an important factor in the effect of the air on human beings. It is only heat and extra moisture in confined, respired air that is depressing. Also, stagnant air is more depressing than air in motion, even when it is of the same constituency. Of course, dust-laden air is always injurious. In artificial ventilation in hospitals, schoolrooms and auditoriums screening from outside dust and vacuum-cleaning from inside dust are essential; in fact, stagnant dust is bad and moving dust is worse.

Too great heat is often maintained in winter in schoolrooms and hospital wards, especially in those for children. Also a great variation of day and night temperature in hospital wards is not advisable. While dry air is not necessarily unhealthful, as noted in high altitudes, deserts, plains, etc., still a normally regulated moisture should pervade hospital wards and operating-rooms, which latter are generally too dry, unless steam sterilizers are in use. Schoolrooms not overheated will probably be normally moist from outside air.

One great disadvantage of stagnant, overheated, overmoist air seems to be its effect on the skin. The skin cannot normally breathe, so to speak; moisture remains on its surface, the skin glands cease to properly act, and the surface circulation and heat elimination are interfered with and the person feels depressed, metabolism is impaired, the appetite fails and loss of nutrition occurs. Everyone realizes the refreshment felt when a window is suddenly opened in a stagnant room. Hence the danger to health in a school, factory or store where the air is stagnant, dusty, overmoist or overheated.

The value of the open-air treatment of many diseases has been incontrovertibly demonstrated. Overheated rooms are bad for the sick, and especially bad for sick babies. An infant may have his body temperature raised by a continued sojourn in an overheated room or by being long subjected to summer heat, at 85 F. or over.

BAD HABITS OF CHILDHOOD

It is only necessary here to name some of the habits that are subversive of the future good health of the child. The physician should be alert to these causes of poor health and nervousness in children, and if he is, proper preventive or corrective treatment will be inaugurated. These bad habits that should be watched for are masturbation, thumb- and finger-sucking or sucking the pacifier (said by some eminent pediatricists to promote the development of adenoids), nail biting, imitation movements or habit-spasms and dirt-eating or other objectionable eating habits.

The various local causes of masturbation and of bed-wetting must not be forgotten. The eradication of such causes sometimes cures the condition like magic.

(To be continued)

3. Allport: Arch. Pediat., June, 1913.

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SATURDAY, OCTOBER 3, 1914

MUSCULAR WORK AND EFFICIENCY

The mechanical efficiency of the human organism as a muscular machine and the conditions which modify or control it are topics that appeal to different persons from different points of view. The employer of labor, the athlete, the physiologist and the physician are interested in the human body, each in relation to that aspect of muscular performance which concerns his own immediate requirements. In one group of cases it is the desire to promote the working capacity of man by suitable diet in which economic considerations may or may not play a part. Scientific management in business has to-day begun to encompass even such once derided details as the feeding of the employed and the careful regulation of the hygienic aspects of their work. Other groups are interested in the maximum possibilities of the human mechanism and in such questions as the relation of training and whatever this implies to the capacity for muscular performance. In the medical world it is usually the restoration of a depleted function that demands attention. In all of the instances cited it becomes desirable, if not actually necessary, to start from some standard—to refer to some norm whereby the deviation from the usual course of physiologic behavior may be estimated.

The Boston Nutrition Laboratory of the Carnegie Institution of Washington has brought together in considerable detail the important observations already ascertained by careful investigation of the subject of muscular work, many of them determined or verified anew by the researches conducted in this scientific establishment.¹ Much of interest in the subject is not new; but when we recall the wide divergence of opinion still existing with regard to the underlying principles of muscular work, the deficiency in our knowledge of the relation of diet and training to it and the widely differing assertions as to the best practices to be followed, it may not be amiss to review briefly some of the admitted fundamental facts which may be regarded as definitely established.

1. Benedict, F. G., and Cathcart, E. P.: *Muscular Work: A Metabolic Study with Special Reference to the Efficiency of the Human Body as a Machine*, Carnegie Institution of Washington, Pub. No. 187, 1913, p. 176.

When muscular work is performed by the human body, the consumption of fuel either from food or from body material is greatly increased. The character of the supply available for this purpose may vary somewhat with the existing conditions. The amount of protein present is ample to provide for all drains on nitrogenous material during rest or short periods of work. Similarly, in a well-nourished man there is a practically unlimited supply of fat. It is the supply of carbohydrate which is comparatively restricted and liable to be somewhat easily depleted. For some years we have been taught that, contrary to the older beliefs, the character of protein metabolism is unchanged by muscular activity. It has become evident that under ordinary circumstances the power to accomplish muscular work is not derived from destruction of protein, but from the combustion of the non-nitrogenous nutrients. There seems to be little difference in the efficiency of the body as a machine, whether fats or carbohydrates are used as fuel. Inasmuch as the storage of carbohydrate is apparently depleted easily by excessive work, it appears as if this type of food-stuff were used in preference to any other by the contractile tissues.

Reasoning that the ideal conditions for a study of the question as to whether or not there is a selective combustion of carbohydrate material during severe muscular work would obtain after the subject had abstained from food for twelve to fifteen hours, that is, when there was a relatively large supply of body-protein, and a relatively small supply of body-glycogen, Benedict and Cathcart have reinvestigated it from this point of view. If, under these conditions, a selective combustion took place, the supply of body-glycogen would be rapidly depleted and this would be indicated by the respiratory quotient. Although the evidence in all of the experiments cited is strikingly in favor of the view that during periods of muscular work there is an increased draft on carbohydrate material in the body, the data by no means indicate that the muscular work is performed exclusively by the combustion of carbohydrate.

The foregoing has raised the inquiry as to the probable amount of carbohydrate stored in the human body. The calculations made from fragmentary analyses of tissues, as well as indirect evidence secured from the new experiments on muscular work, suggest not far from 400 gm. (less than a pound) as a normal figure. This is by no means enough to perform a vigorous muscular task such as was undertaken by one of the subjects of the Nutrition Laboratory, who accomplished, on a stationary bicycle, work equivalent to a "century run" of 100 miles before breakfast, a remarkable evidence of staying-power in man. In this connection we may note some of the newer data on the mechanical efficiency of man, that is, the relationship between the energy consumption and the output

of work. The highest value observed, in the case of the bicycle-rider referred to above, was 41 per cent., an exceptionally high figure. The average efficiency for a large number of experiments was 30 per cent. It does not vary greatly with different subjects. These data considered in conjunction with the usual muscular accomplishment there reported give substantial evidence of the superior functioning of the human mechanism.

Another observation, on the bearing of which we have commented in the past,² was that the pulse-rate even during severe muscular work, very closely follows the amount of the energy output—an observation that is fully in accord with the values secured with normal resting subjects which show that the pulse-rate and the total metabolism are intimately related. Although with the cessation of work the pulse falls rapidly, there is a distinct tendency for the rate to stop at a much higher level than before the work is undertaken. The long-continued rapidity of respiration and heart-beat after exercise, as, for instance, after running, is familiar evidence that the intense metabolism incidental to active muscular work does not instantly disappear with the cessation of the work. This after-effect of muscular work indicating the persistence of a distinctly higher metabolism for some time must be taken cognizance of in the future consideration of the physiology of exercise.

COOPERATION IN PUBLIC HEALTH ADMINISTRATION IN THE SMALL COMMUNITY

The limitations and inefficiency of the health office of the small community are recognized by public health workers and this probably constitutes one of the greatest single obstacles to the general advancement of the public health movement. The strategic importance of the local health office in the warfare on disease must be obvious. With an inefficient administration at this point the citizens are at all times exposed to the danger of attack and are deprived of that protection which modern sanitary science is enabled to throw about them. So far as rural health conditions in many sections of our country are concerned, the scientific work of the last quarter of a century might as well have never been done. This condition is fundamentally due to two facts: First, the science of public health is a complex of specialties, to be mastered, even in principle, only by an expert with years of training and to be efficiently administered, in its various branches, only by a group of trained workers under such expert supervision; second, a small community cannot financially afford the services of such a staff. The situation has one redeeming feature: the small town which cannot afford a trained staff requires but little of the time of each of its members, so that

cooperation among towns is plainly indicated. The minimum group for a complete and efficient health office is necessarily a complete, though diminutive, city office and cannot be farther subdivided. If this group be too large for the needs and financial resources of the small unit of population, there remains the necessity of broadening the territory.

With a view to the overcoming of these deficiencies in the health work of small communities, and in an endeavor to find a practical solution of the difficulties, an experiment in cooperative public health administration was undertaken under the auspices of the Department of Biology of the Massachusetts Institute of Technology. This important work was under the immediate supervision of Prof. Earle B. Phelps of the Hygienic Laboratory, U. S. Public Health Service, but at that time on the faculty of the institute. The report of the work has just appeared as a publication of the Public Health Service,¹ and for those interested in the improvement of the health affairs of small urban and rural communities will be a most illuminating document. A staff, comprising an administrative officer, a secretary and bacteriologist, a plumbing and sanitary inspector and an assistant inspector with the necessary clerks, and with special assistants for certain special work, was first organized. The services of the staff were offered to several communities, which were invited to enter into a contract with the organization for one year. The towns of Wellesley, Belmont, Framingham, Needham, Weston, Canton and Winchester, and the city of Melrose accepted this proposition, the three last named for milk inspection only. Headquarters were established in Wellesley with a fully equipped office and laboratory, while the telephone and an automobile and motorcycle provided rapid communication between the various centers of activity.

Especial attention was given to the milk supply and to the rapid handling of laboratory diagnostic work. Small portable incubators were located at the various centers, so that diphtheria cultures deposited any time before midnight were in a condition to be examined and reported on early the next day. Particular emphasis was laid on the importance of studying each case of contagious disease as to its origin and, especially in the diphtheria work, this policy led to results of immediate and demonstrable value.

In the milk work reliance was placed wholly on a campaign of publicity, coupled with a helpful attitude toward the milk men who desired the assistance of the office in the improvement of their supplies. Monthly reports, chemical and bacteriologic, were published in the daily press. Fly and mosquito exterminating campaigns were organized in several of the towns. Special attention was given to the sanitary inspection of markets and shops and to the general sanitary improvement of the town as a whole in mat-

2. The Circulation and Muscular Efficiency, Current Comment, THE JOURNAL A. M. A., Sept. 13, 1913, p. 874.

1. U. S. Pub. Health Rep., Sept. 25, 1914.

ters of drainage, fly-breeding conditions, and general cleanliness.

The most interesting feature of the work, next to its promptness and thoroughness, is the very low cost at which it was carried out. Exclusive of plumbing inspection, which is not properly a board of health function, the total cost of the work was 19 cents per capita per annum. The total population served was 62,000 persons, 32,000 of whom received only the milk inspection service. The work which was begun as a practical experiment in the science of public health administration has been continued by the towns interested on a considerably enlarged basis with a sufficient appropriation to make it self-supporting and, what is more important than all else, with the cordial support and backing of an enlightened public opinion.

The great value of the report is to show, in a convincing way, that the problem of providing for the health work of small communities can be taken care of in a feasible and satisfactory way at a reasonable cost. It is hoped that other communities will take up this movement.

AN EXPLANATION OF LIPEMIA

The occurrence of fats or lipid substances in the blood to a degree which renders the serum more distinctly cloudy or milky than usual may have either a normal or a pathologic import. The various manifestations of lipemia cannot at present be interpreted or explained on a single basis applicable to all the known instances. After a meal rich in fat, when the thoracic duct is pouring a creamy chyle into the blood-stream, the serum may give evidence of a very pronounced lipemia because the fats are being contributed to the circulation more rapidly than they can be withdrawn from it into the storage depots. A temporary accumulation in the blood thus takes place. This is not observed in all individuals alike, however; for there are species, like the rabbit, in which a physiologic lipemia of dietary origin rarely if ever takes place. In health the disposal of the fat keeps pace in such animals with its contribution to the blood-current, with a nicety of regulation reminding one of the adjustments in regard to the content of blood-sugar. The lipemia observed in other species after feeding is transitory at most.

Under a variety of pathologic conditions a pronounced lipemia may arise often independently of the food intake. Increased fat content of the body is observed quite regularly in starvation, in different forms of anemias and cachexias, in diabetes and particularly in severer stages of the disease, in chronic alcoholism, after prolonged narcosis, and in certain kinds of intoxications. In all of these conditions the inanition factor, leading to a transport of fat in the body, may come into play.

What is the cause of these lipemic states? A lack of oxidative capacity on the part of the abnormal organism was at one time suggested in explanation. Decreased oxidation in the body is among the physiologic rarities and can scarcely be held to account for the lipemic alterations in the blood, particularly in view of our ignorance as to the way in which fat is catabolized in the organism. Again, it was customary to assume that the fat in lipemia arises partly from the food, partly from fatty degeneration of the cells of the blood, the vessel walls and the viscera. The newer views regarding fatty infiltration versus degeneration give no support to such hypotheses.

Turning to probabilities more likely in the present state of our knowledge of fat metabolism, it is conceivable that, in lipemias not attributable to undue fat intake, fat is discharged into the circulating blood from some endogenous source at a rate far exceeding its subsequent removal therefrom. If this were the case, then the storage places ought soon to be emptied of their reserves of fat. As a matter of fact, this is not always the case in lipemia. We are thus left with a final hypothesis that the fat is dammed up, as it were, in some way in the blood and cannot escape either back into the tissues or to the usual seats of its destruction. In other words, it may be that pathologic lipemia results because the blood has lost its lipolytic power so that the fat is no longer converted into forms that can traverse the capillary walls to the places where it is normally consumed.

The existence of fat-hydrolyzing enzymes—lipases or esterases—in the blood has been alternately affirmed and denied, but must at present be looked on as demonstrated.¹ The researches of Sakai² render it probable, to say the least, that an abnormal decrease in the serum lipase is one of the factors, if not actually the decisive one, in accounting for the inability of the blood to get rid of its fat in certain forms of pathologic lipemia. This can be brought about, for example, by repeated hemorrhage in rabbits. The anemia thus produced has been demonstrated by Boggs and Morris³ to be attended with a milky turbidity of the blood-serum sufficient in some cases to alter the appearance of the entire blood noticeably. The diminished content of serum lipase usually precedes the appearance of the visible enrichment in circulating fat. According to Sakai, two agencies are accordingly involved in the genesis of a lipemia. One is the factor which furnishes the fat. This may be endogenous and derived from fat transport out of the tissues, or exogenous and of dietary origin. The other factor leading to a prolonged lipemia, in contrast with the transitory types accounted for by dietary considerations, involves

1. Rona and Michaelis: *Biochem. Ztschr.*, 1911, xxxi, 345; xxxiii, 413. Davidsohn: *Ibid.*, 1913, xlix, 249. Izar: *Ibid.*, 1912, xl, 390. Bauer: *Wien. klin. Wchnschr.*, 1912, No. 37, p. 1376.

2. Sakai, S.: *Zur Pathogenese der Lipämie*, *Biochem. Ztschr.*, 1914, lxii, 387.

3. Boggs and Morris: *Jour. Exper. Med.*, 1909, xi, 553.

the inability of fat that has reached the blood-serum to leave it. It is this significant feature of fat stagnation which the lack of lipolytic enzyme in the blood is now believed to explain.

Chemical examination of the fatty material present in the blood in some of the experimental types of lipemia has shown that the increase in fats is attended with augmentation of the cholesterol present, though the latter is never increased to the same extent that the fats proper are. Cholesteremia has been described to occur under various conditions; but Sakai believes that the increase of cholesterol in lipemia is a secondary consequence, attributable perhaps to the ready solubility of cholesterol in fats and the ease whereby it forms esters with fatty acids. Despite the accompaniment of fat and lipid in certain lipemias, the possibility of cholesteremia without noteworthy lipemia still remains.

THE OHIO STATE UNIVERSITY, MEDICAL EDUCATION AND FADS

A year and a half ago, by legislative enactment, the trustees of the Ohio State University were authorized to create "a college of medicine." In accordance with that authority they accepted as a gift the valuable properties of the Starling-Ohio Medical College, of Columbus, a well-equipped and well-established Class A institution. Plans were made to provide additional financial support and announcements were published that this fall and a year hence the entrance requirements would be increased, respectively, to one year and two years of collegiate work. Thus far the trustees had acted with unquestioned and commendable caution.

Then to the surprise of many friends of the university, the trustees proceeded to create a homeopathic medical college. Had this been done with a careful regard for educational standards and provision for equipment and for clinical material equal to that which was used in creating the college of medicine, there would have been less room for criticism; but for the homeopathic college, instead of having a high-grade, thoroughly equipped institution to start with, this new venture was begun by taking over what there was left of the Cleveland-Pulte Medical College of Cleveland, a Class C institution reported to be not recognized by the licensing boards of at least twenty-seven states! Even the friends of that institution had considered its future as hopeless. Then, instead of requiring a year of collegiate work for entrance to this homeopathic college, it is announced that only a high-school education is to be required, notwithstanding the fact that these students will be taught for the first two years the same subjects, in the same classes and by the same teachers as the students in the college of medicine. It is also a strange announcement that, for each of these first two years, the students

enrolling in the homeopathic college are to be charged only \$125, while those entering the college of medicine are to pay \$150. Again, whereas, the clinical material for the college of medicine includes the facilities provided by two large hospitals having a total of over three hundred beds, besides such facilities as are obtainable in several other hospitals and in two large dispensaries, for the homeopathic college, it appears that the only provision is an old, abandoned dormitory, no patients as yet being in evidence.

If a homeopathic college was to be started, why was not the same excellence of equipment provided as for the college of medicine; why the inadequate provision for clinical instruction; why the smaller fees charged and especially, why the lower entrance qualifications demanded? Was the opening of a homeopathic college of such extreme importance as to warrant these wide variations? Why is it that lower entrance qualifications have for several years been granted for homeopathic students by the University of Michigan and are now granted by the Ohio State University?

The most surprising action of the trustees, however, was the creation of a school of optometry, thus giving the university's name to what, in common practice, has all the earmarks of another fad in drugless therapy. Here again, the objection is not so much to the teaching of courses in optometry, as to the lowering of entrance standards and to the misleading and unwarranted dignity given to an unprofessional occupation by expanding such courses into a special "school." Of course, those who are to fit eye-glasses need to have a knowledge of physics and of refraction, but that is no reason why such students should be admitted to college courses after only two years of high-school education. Nor is it a reason why the university should encourage a school the "graduates" of which, if the customary practice is followed, and regardless of their limited training, will pose as "specialists" in all the diseases of the eye!

If the Ohio State University is going to establish any "school" having such low entrance requirements,¹ why stop with optometry? Why not start a school of osteopathy, which is a much older system and has been more thoroughly advertised than optometry? Why not start also a "school" of chiropractic, a "school" of physcultopathy, a "school" of nahprapathy and others for each of the endless lot of "sects" and "systems" which are claiming exemption from fair educational standards? One is surely as worthy of such dignity as another. If educational standards are to be lowered for one, why not for all? This is indeed a serious matter, and it is high time that even politicians should be brought to realize that medicine is now a science and that science knows neither isms nor schools.

1. A "school," according to the common understanding of educators, and according to a definition adopted by the Association of American Universities, is a part of a university, for admission to which two years of collegiate work are required.

Meanwhile, it is understood that this "recognition" by the Ohio State University is to be made great use of by the optometrists of Ohio in their efforts to secure the passage of legislation giving them a special licensing board and special exemption from the provisions of the medical practice act. It is a question whether the same influences which seem to have prevailed with the trustees of the Ohio State University will also succeed in breaking down the laws which thus far have provided the same educational qualifications for all who are to practice the healing art. If they do succeed, then the only barrier which stands between the sick and suffering people of that state and the hordes of illiterate and incompetent would-be-practitioners will be thrown down. We are not willing to believe that the people of Ohio will ever permit such a misfortune to happen. Surely, they are as much entitled to protection against uneducated physicians as are those of any other state.

THE RELATION BETWEEN THE COLOR OF THE BODY-FAT AND THE BREED OF CATTLE

The demonstration of the origin of the characteristic yellow colors which are found in milk-fat, the corpus luteum, etc.,¹ brings a reminder that it is not uncommon to find the body-fat of cows, especially of the Jersey and Guernsey breeds, characterized by a very high yellow color. This has led to the belief that this phenomenon is characteristic of only those breeds. As a matter of fact, butchers and the consumers also look with disfavor on beef from these animals on account of the high color of the fat. Palmer and Eckles² have shown that the color of the body-fat of Jersey cows is as much dependent on the food as is the color of the milk-fat. In studying the normal breed relations, the popular opinion that the body-fat of Jersey cows is normally characterized by a higher yellow color than Holstein cows has been at least partially confirmed by experimental study, although it was found that Holstein cows may also possess high-colored body-fat. At least, there seems to be more breed characteristic in this respect than in the case of the pigmentation of the milk-fat. Palmer and Eckles assure us that there is no foundation for the belief that beef has a lower value because its fat has a high color. If this pigment is the same as is demanded by the consumer for butter, why, they ask, should not beef with high-colored fat also be more desirable? It is recognized, of course, that some of the unfavorable attitude toward beef with highly colored fat arises

partially from the fact that it indicates that the beef probably came from a dairy cow.

When there is need of fat either for combustion or for milk production, and an adequate amount is not furnished preformed in the ration, this nutrient is mobilized from the storage depots in the organism. Here not only fats, but also ingested lipochromes may become deposited. The normally high color of the body-fat of Jersey cows, and also of Guernsey cows explains why cows of these breeds often appear to be producing well-colored butter on a ration deficient in carotin and xanthophylls. When cows whose body-fat has a high yellow color are put on a ration deficient in carotin and xanthophylls, and also, as is usually the case with such rations, deficient in food-value, the body-fat is called on to furnish energy for the animal and also in many cases to supplement the food digestion products in the production of milk-fat. It is readily seen that in such cases an important source is opened up for pigments for the milk-fat. The importance of this source would depend on the amount of highly colored body-fat available for the needs of the body, and on the rapidity with which it would be used up.

It is interesting to note that the skin secretion of Jersey (and Guernsey) cows is often characterized by a more or less yellow color. This is considered by the breeders of these cattle to indicate their ability to secrete yellow milk-fat. The yellow skin pigment is sometimes very abundant in the waxy secretions in the ears of these animals. The pigments which characterize the skin secretions of the Jersey breed are the same pigments that are found in the milk-fat and body-fat. This characteristic is by no means indicative of the ability of the breeds to secrete yellow milk-fat under all conditions. The only indication of this is whether the food contains an abundance of carotin and xanthophylls.

The color of butter, that is, milk-fat, has been the subject of much misconception in relation to the supposed dietary value of the product. Americans are at length learning to enjoy butter independently of a "high" color or a liberal admixture of salt, neither of which is apparently essential to the fat itself. Palmer and Eckles remind us that the yellow body-fat of Jersey and Guernsey cows should not be a point against the use of these animals for beef. The pigments here are the same as those for which the consumer will pay a higher price when present in butter.

1. The Natural Yellow Pigments Occurring in the Body, editorial, THE JOURNAL A. M. A., Sept. 12, 1914, p. 948.

2. Palmer, L. S., and Eckles, C. H.: Carotin—The Principal Natural Yellow Pigment of Milk-Fat: Its Relations to Plant Carotin and the Carotin of the Body-Fat, Corpus Luteum and Blood Serum. I. The Chemical and Physiological Relation of the Pigments of Milk-Fat to the Carotin and Xanthophylls of Green Plants. II. The Pigments of the Body-Fat, Corpus Luteum and Skin Secretions of the Cow, Jour. Biol. Chem., 1914, xvii, 191.

A Point Sometimes Forgotten.—We cannot possibly tell whether a treatment is good or bad unless we know what is the natural course of the disease. Over and over again good results are ascribed to treatment quite unjustly; the patient has got well because in the natural course of the disease he would do so; treatment has had nothing to do with it.—W. Hale White, *Lancet*.

Current Comment

SUCH IS "LIFE"

Life, as most of our readers know, is a bright and interesting humorous weekly published in New York City. To physicians *Life* is of interest because of its systematic blackguarding of the medical profession. Anything medical makes the editor of *Life* see red, and much talent has been utilized by *Life* to discredit the triumphs of modern medicine and to support the various organizations that make a profitable business of opposing scientific medicine. For some years *Life* has acted as the unofficial organ of the antivivisectionists, and no libel on the humanitarianism of medical men has been too gross for *Life* to give it publicity. *Life's* reactionary attitude in matters affecting public health is further emphasized by some of its advertisements. The dangerous and fraudulent acetanilid preparation "Bromo-Seltzer" has, for a consideration, been heralded through the pages of *Life* as a "cure" for headache; the corpulent readers of *Life* have been urged to take "Fat-Off," a worthless and fraudulent nostrum, sold as an obesity cure and characterized by the government chemists as a "paste made of soap and water" in the proportions of one of the former to nine of the latter; "Odorono," exposed in *THE JOURNAL*, Jan. 3, 1914; and the fraudulent "Morley Ear Phone" (see *THE JOURNAL*, Nov. 22, 1913) are both given space in recent issues of *Life*; the current number contains a half-page advertisement of "Buffalo Lithia Springs Water" (one dose of lithium to every 200,000 gallons of water) recommending it for "Bright's disease, renal calculi, stone in the bladder, albuminuria, rheumatism and gout." For further advertising frauds given space in *Life* see the Propaganda department of this issue. All this is by the way. The reason for this comment is to bring before our readers a letter recently written to *Life* by a layman, Mr. Charles H. Fahs of Madison, N. J. Mr. Fahs wrote:

"Dear *Life*: You take your fling, and you must. That's your mission. But listen!

"When Death first struck near me I was but 4 years old, and it was my little sister that went—spinal meningitis. Serum therapy was yet to be. Last year my only boy lay in convulsions—spinal meningitis. A fast auto ride to a Brooklyn hospital. Antimeningitis serum used. Not another convulsion thereafter. I thanked God for Simon Flexner and his ilk and took courage. What would you have done? How would you have felt?

"When Death struck near me the second time it was a baby brother that went—diphtheritic sore throat. Antitoxins were unheard of as yet. When I took my family abroad for a winter three years ago, I felt easier when I discovered that the German town we had chosen for our stay had a high-grade laboratory where the diphtheria antitoxin had been developed. How would you have felt?

"When Death struck near me the third time, again it was a younger brother who was claimed—infection following vaccination against small-pox which was active near by. We learned later that the alleged doctor who did the vaccinating had neither legal nor moral right to hang out a shingle, and bitterness was in my heart. Two years ago I was about to start for a long journey through Asia where small-pox was to be met with on every highway. In spite of sad memories, I had myself vaccinated before I sailed. What would you have done?

"During the Spanish War I saw Death when its name was Legion. A score of times on a single afternoon I heard the muffled drums and saw the reversed arms as the melancholy processions left the fever hospitals. Inoculation for typhoid was unknown. On that far Eastern trip of two years ago I was to face possible typhoid infection at almost every meal time. I was inoculated for typhoid before I started. What would you have done?

"Seven years ago, physically undone, I lay in a hospital while capable and faithful physicians sought to ascertain the obscure cause of it all. Finally I was asked whether I was willing to undergo the tuberculin test (hypodermic) for diagnostic purposes. I consented. The reaction was severe, but it pointed the way, and the subsequent treatment for tuberculous peritonitis brought me back to health. Would you have consented?

"As a lonesome boy on the farm I had a collic as a servant, companion and pet. Because of disease he had to be shot, and my heart was broken. Never have I had a pet since. But I have children, and I am willing for all the dogs and cats and guinea-pigs to be sacrificed if these precious ones can be better protected against the hostile microbes of various kinds, that have cost my home the life of one child and severe if not desperate illnesses for each of the other three within a single year.

"The profession of medicine has not succeeded in isolating itself entirely from carelessness, inefficiency, selfishness, or even from hardness of heart with respect to suffering on the part of animals or folks, but I know too many physicians of a noble type, men of high worth in head and hand and heart, to subscribe to any broad indictment of the profession's personnel or processes.

"In a word, *Life*, I think you're honest, but I don't think you're fair."

The letter, however, was not published in *Life* but was returned to Mr. Fahs as "not available." Presumably it was not "funny" enough. It appeared in *The Journal of the Outdoor Life* for September.

PUBLIC SCHOOL COURSES FOR ADULTS IN HEALTH PRESERVATION

The popular conception of what constitutes education is growing and our ideas as to the usefulness and effectiveness of our public school system are continually broadening. The latest idea comes from Rochester, New York, where the Board of Education, in response to a petition signed by three thousand citizens of Rochester, has instituted in the public schools a course of instruction for adults, to be given outside of school hours, by which one may learn, in the language of the announcement, what diseases are preventable, how the body can be made better able to resist disease, how to nurse scientifically when home nursing is necessary, how to observe and report symptoms to the doctor, what to do in emergencies and (quite as important) when to do nothing until the doctor arrives, what food is proper for the sick and how to prepare it, how to care for children and how to make the aged comfortable. This course, instituted in an experimental fashion last winter, is to be repeated during the coming year. The motto adopted by those in charge might well be made the battle cry of the entire educational movement for better public-health conditions: "Applied knowledge is the only known way for preventing and curing sickness." The announcement states that the ultimate object is to obtain for every one the longest possible period of the greatest possible usefulness and enjoyment. "Live a Little Longer"—the

title of the leaflet containing the announcement—is simply a graphic and epigrammatic way of emphasizing the same idea. The recognition by the Rochester Board of Education that it has a duty and responsibility, not only to schoolchildren, but also to the entire community, and that the most important subject it can teach is how to keep well, sets a new and high standard for other boards of education.

PREVENTING TYPHOID FEVER

The Kentucky State Board of Health is doing some effective work in educating the public of that state regarding health matters. The last number of its *Bulletin* received is devoted to the prevention of typhoid fever. Accompanying the *Bulletin* is a large poster, setting forth the advantages of vaccination for typhoid fever, and enumerating over 270,000 vaccinations which were without harmful results and with enormous reduction in the sick rate. The statistics cover the experience of the United States Army, the British Army in India, and the Japanese Army, and include other data regarding the effectiveness of the use of typhoid vaccination. This poster is an example of some of the efficient methods of publicity now being used by modern health officials. While the *Bulletin* may be read by scores, this large and attractive poster will be read by thousands, and is bound to be of service.

Medical News

CALIFORNIA

Personal.—Dr. Aaron S. Green, San Francisco, has returned from a trip around the world.

European Travelers.—Dr. Gustavus C. Simmons, Sacramento, has reached Paris on his way home.—Drs. Manuel M. Enos, Oakland, and Henry Horn, San Francisco, have returned from abroad.

COLORADO

Personal.—Dr. Oscar J. Pfeiffer, Denver, and Dr. and Mrs. William A. Kickland, Fort Collins, have returned from abroad.—Dr. Ray L. Drinkwater, has been appointed secretary of the Denver Municipal Clinic to succeed Dr. Asa Z. Hall, resigned.

Health Seekers' Bureau Established.—A health seekers' bureau which will give free advice and information to new-coming tuberculosis patients, has been established by the Visiting Nurses' Association of Denver with offices in the Temple Court Building. The bureau will be open for free consultation from 9:30 to 11:00 on Monday and Thursday mornings.

State Association Meeting.—The annual meeting of the Colorado State Medical Association in Boulder, September 8 to 10, was the largest in the history of the organization. Resolutions advancing a law establishing a public health commission, and closer cooperation between physicians and druggists in restricting the sale of dangerous drugs, were adopted. The following officers were elected: president, Dr. George B. Packard, Denver; vice-president, Dr. Ella A. Mead Greeley; secretary, Dr. Crum Epler, Pueblo; treasurer, Dr. William A. Sedwick, Denver; and councilors, Drs. James A. Matlack, Longmont and Edgar Hadley of Telluride.

CONNECTICUT

Personal.—Dr. Owen O'Neill, Willimantic and Dr. and Mrs. Edward W. Smith, Meriden, have returned from abroad.

Infirmity Accepted.—At the weekly meeting of the State Tuberculosis Commission held in Shelton, the new infirmary erected at a cost of \$25,000 was formally accepted from the contractor.

Wants Medical Inspection.—The town school committee of Danbury has voted to ask the town board of finance for an additional appropriation of \$1,500 for the establishment of a system of medical inspection in the schools of the town.

ILLINOIS

Personal.—Dr. Edmund G. Sugg, Leland, sailed from Seattle September 26 for Shanghai, China, where he will be in the employ of the Chinese government.—Dr. and Mrs. Burdette E. LaDue, Ottawa, have returned from abroad.

Hospital Buys Property.—A piece of property, 109 x 125 feet in extent at Wisconsin Avenue and Monroe Street has been purchased by the Oak Park Hospital and Training School for Nurses of the Sisters of Misericorde, for a nominal consideration.

Chicago

Housing Conditions in Evanston.—In a meeting of the Evanston Tuberculosis Society, held recently, the question of housing conditions in Evanston was considered; and it was urged that the society bring the situation before the city council.

Infantile Paralysis on North Shore.—Infantile paralysis has been frequent along the north shore. Four cases are reported in Highland Park, five in Waukegan, and one has occurred at Grays Lake. The authorities have stated that if new cases continue to occur schools will be closed as well as picture houses.

INDIANA

Personal.—Dr. Frank L. Sharrer, Francesville, has been appointed chief surgeon of the Guthrie, Okla., City Hospital.—Dr. Arthur E. Guedel has been appointed superintendent of the Protestant Deaconess Hospital, Indianapolis, to succeed Dr. A. L. Marshall. Dr. Marshall has resigned in order to enter the practice of the eye, ear and throat in Indianapolis.

Tristate Colored Association Formed.—On September 9, at Indianapolis, representatives of the colored physicians, dentists and pharmacists of Indiana, Ohio and Kentucky, formed a tristate association and elected the following officers: Dr. William A. Method, Columbus, president; Dr. William J. Woodlin, also of Columbus, Ohio, vice-president; Dr. Henry W. Armistead, Indianapolis, secretary, and Dr. Abram L. Cabell, Terre Haute, Ind., treasurer. The first regular meeting will be held at Columbus, Ohio, next July.

State Society Meets.—The Indiana State Medical Association met at Lafayette, Ind., September 23, 24 and 25. The following officers were elected: president, Dr. Frank B. Wynn, Indianapolis; first vice-president, Dr. Edgar R. Cox, Kokomo; second vice-president, Dr. Spencer W. Smith, Wabash; third vice-president, Dr. W. J. Malloy, Muncie; secretary, Dr. Charles N. Combs, Terre Haute; treasurer, Dr. David W. Stevenson, Richmond; delegates to the American Medical Association, Dr. Charles H. Good, Huntington, and Dr. Miles F. Porter, Fort Wayne; alternates, Dr. Charles A. White, Danville, and Dr. Anexamander M. Hayden, Evansville. Indianapolis was chosen for the next meeting. A recommendation was made to the governor and the state legislature, that a commission of experts be appointed to codify the laws of the state, concerning health, on sale of drugs and other similar measures. A grant of \$200 was made to the pathological exhibit to be used for prizes each year.

Plans for Disease-Prevention Day.—Great plans are being made for Disease-Prevention Day, October 2. One of the important features will be a parade containing numerous floats illustrating graphically the various phases of disease prevention. In the evening a mass meeting will be held. All the business houses have promised window space to disease-prevention exhibits, and in newspaper advertising many of the department stores are pointing out the various ways in which health is conserved in their buildings. Not only in Indianapolis, but also in the small towns of the state, programs are being planned. The feature event in Terre Haute will be a monster parade with drill teams from every city school, floats from the various business houses, several bands, civic organizations and military divisions. The schoolchildren will carry banners on which will be printed rules on health and disease prevention. The newspapers of the various towns and villages are all publishing many editorials devoted to the subject of health. Thus it is stated by the *Huntington Herald*: "We believe that home making should be regarded as a profession, that right living should be the fourth "R" in education; that health is the duty and business

of every individual." Among mottos which are recommended are "All for Health—Health for All" and "Know Your City."

IOWA

Small-Pox Bulletin Issued.—The Iowa State Board of Health is sending out a special bulletin on small-pox to county auditors and superintendents for free distribution among the people. Copies can also be obtained by addressing the secretary, Dr. Guilford H. Sumner, State Board of Health Office, Des Moines, Iowa.

LOUISIANA

New House Officers in Charity Hospital of New Orleans.—On recommendation of Superintendent Wilkins, Dr. Adolph Jacobs and Dr. Warren Scott were elected house officers for the coming year, and Dr. Fernandez admitting physician.

School of Tropical Medicine.—Dr. William H. Seemann, bacteriologist of the State and City Board of Health, has been elected dean of the Tulane University School of Hygiene and Tropical Medicine. He succeeds Dr. Creighton Wellman who resigned a year ago.

Personal.—Dr. Gustav Mann of Tulane University Undergraduate and Dr. Charles L. Chassignac of the Post Graduate School have recently returned from Europe.—Dr. Otto Joachim has been detained in Germany and is serving in the Military Hospital in Landau.—The United States Public Health officers on plague duty in New Orleans entertained their friends of the medical profession at mess, Galatoire's Restaurant on Sept. 18, 1914.

MARYLAND

Personal.—Dr. William C. Gorgas and Miss Mabel Boardman, president of the Red Cross, were the chief speakers at a meeting of the Red Cross Society, which was held in the City Hall, Baltimore, on September 23. Dr. Thomas Buckler has returned to Baltimore from a tour of Europe.

Report of Medical Inspectors of Schools.—The medical inspectors of schools found 13,353 pupils in the public schools suffering from physical defects last year, according to the annual report of the Health Department. It is stated that 4,437 were cured and 3,129 improved, while 5,189 were not improved by treatment. Nearly 3,000 children in the parochial schools were found with various defects. Of this number 921 were cured and 527 improved, while 1,619 were unimproved.

MINNESOTA

Investigation Causes Transfer of Patients.—As the result, it is said, of an investigation of the Hastings State Hospital, held in August last with especial reference to patients afflicted with tuberculosis, six tuberculous patients have been transferred from that institution to the St. Peter State Hospital.

Transferred to New Hospital.—Tuberculosis patients are being transferred by the board of control into the new Tuberculosis Hospital on the grounds of the City and County Hospital, St. Paul. Fifty of the hundred beds in the new hospital will be occupied at once and the remainder held in reserve. The institution at Cuenca will be held open, and the state will probably continue to send patients of tuberculosis to the State Sanatorium at Walker.

Tag Day for Preventorium.—Tag day will be held in St. Paul, October 1 and the proceeds, instead of being devoted to the general work of the campaign against tuberculosis, will be appropriated to the establishment of a children's preventorium in St. Paul, an institution where children from families in which tuberculosis exists or living under conditions predisposing to tuberculosis, may be given outings in the summer and the privilege of the fresh-air school in the winter. It is announced that \$5,000 will be sufficient to start the project.

MISSOURI

Missouri Physicians Abroad.—Dr. Joseph E. Sawtell, Kansas City, has reached London on his way home.—Dr. James W. Heddens, St. Joseph, is in London and expects to reach home early this month.—Drs. Floyd H. Spencer and Joseph J. Bansbach, St. Joseph, and Dr. and Mrs. Edward G. Blair, Kansas City, have returned from Europe.

Laboratory for St. Joseph.—At the Missouri Conference of the Methodist Episcopal Church, South, plans suggested by Dr. Daniel Morton for a medical research laboratory to be maintained in St. Joseph by the church, were adopted. It is thought that \$25,000 will be sufficient to insure the establishment and successful maintenance of the institution.

New Emergency Hospital at St. Joseph.—The city council September 14, decided to convert the old pesthouse into an emergency hospital and to erect a smaller building for a pesthouse near by. Ordinances have been introduced appropriating \$2,000 for remodeling the old pesthouse into an emergency hospital and \$2,500 for building the new pesthouse.

Personal.—Dr. William J. Frick has been elected president of the medical staff of the Kansas City General Hospital.—Dr. Clarence P. Pickett, Trenton, has resigned as physician of Grundy County.—Dr. George Halley, for many years a prominent surgeon of Kansas City and who retired from practice three years ago, celebrated his seventy-fifth birthday anniversary, September 11.—Dr. Howard Hill has resigned from the surgical staff of the Kansas City General Hospital.

Banquets to Physicians.—Sixty-one members of the new staff of the Kansas City General Hospital were the guests at a dinner September 17 of the hospital and health board. Thomas M. Finn, president of the board, officiated as toastmaster.—About one hundred physicians of St. Joseph were the guests of Dr. Charles R. Woodson at the Woodson Sanitarium at a dinner which marked the first fall session of the Buchanan County Medical Society. Dr. Joseph J. Bansbach presided.

St. Louis

Personal.—Dr. Solomon A. Weintraub has returned after a year abroad during the last month of which he was in charge of a military hospital at Königsberg, Germany.—By the will of Dr. Martin Hayward Post, a bequest of \$30,000 was made to his widow in lieu of dower rights.—Dr. Charles H. Eyermann has succeeded Dr. Ralph A. Kinsella, resigned, as chief resident physician of the City Hospital.

NEBRASKA

Personal.—Dr. Nelle G. Carr Deffenbaugh has resigned as superintendent of the Kearney Tuberculosis Hospital and will be succeeded on November 1, by Dr. Edwin R. Van der Slice, at present assistant superintendent of the Tuberculosis Sanatorium at Mt. Alto, Pa.—Dr. Paul A. De Oigny has been appointed local surgeon for the Burlington system at Milford.—Dr. W. C. Purviance, who has been for six years in Corea as a medical missionary in charge of the Presbyterian Hospital, has located in Beatrice for practice.—Dr. Rachel A. Watkins, York; Dr. and Mrs. August F. Jonas, Omaha, and Dr. and Mrs. Elmer R. Porter and two children, Omaha, have returned from abroad.

NEW YORK

New York City

Personal.—Dr. and Mrs. John A. Fordyce and Dr. John R. Dickson have returned from Europe.—Among the surgeons who sailed for France on September 26 on the staff of the American Ambulance Hospital are Dr. Richard Derby and Dr. Joseph P. Hoguet.—Dr. and Mrs. Leonard A. Dessar have returned from Europe.—Dr. Robert W. Hinds of Buffalo has been appointed to take charge of one of the units of the American Red Cross which is assigned to England.

Physicians Must Register with Department of Health.—In the city of New York the Sanitary Code, Section 160, makes it mandatory for all physicians practicing within the city limits to register at the office of the Bureau of Records of the Department of Health in the borough in which they intend to practice. To do this the physician must present his license to practice medicine or the county clerk's certificate. No certificate of death, birth or still-birth will be accepted from a physician who is not registered in the Department of Health.

NORTH CAROLINA

One Sixteenth Disqualifies.—The supreme court of the state, in the case of Johnston vs. Wilson County School Board, holds that an admixture of one-sixteenth of negro blood is sufficient to disqualify a child for admission to a school for white children in the state.

Extension of Hookworm Campaign.—The hookworm bureau of the State Board of Health has added to its force Dr. W. H. Kibler of Morgantown who is to begin work at Mount Pleasant, Nash County. His work will supplement but not supersede that of Dr. M. E. Champion at Red Oak in the same county. Similar work is being done at Salem, Sampson County; Wrightsboro, New Hannibal County; Hallsboro, Columbus County, and Philadelphus, Robeson County. Satisfactory reports are received from all these communities and the work in some is nearing completion.

Progress on the Work of the Rockefeller Hookworm Commission.—Encouraging results are reported by Dr. M. E. Champion in charge of the dispensary at Red Oak, Nash County. Over one thousand persons have been examined and 26 per cent. found infected. The percentage of whites infected is greater than that of the colored. All are ready to cooperate enthusiastically in eradicating the disease.—Dr. W. H. Kibler, Morganton, has taken charge of the community health work of Mt. Pleasant, under the supervision of the hookworm department of the State Board of Health.

Memorial Tablet Presented.—The Medical Society of the State of North Carolina presented a bronze tablet in memory of Dr. P. L. Murphy, for twenty-five years superintendent of the Morganton State Hospital, to that institution, September 19. Dr. John McCampbell, superintendent of the institution, accepted the gift in behalf of the hospital staff. Under the bust of the deceased in bas relief is the legend—"To the memory of Patrick Livingston Murphy, 1848-1907. The beloved physician and gifted alienist who organized this hospital and who was the superintendent for the first twenty-five years of its existence, in January, 1883, until his death Sept. 11, 1907."

OHIO

Personal.—Dr. John M. Withrow has resigned as a member of the board of hospital commissioners for the building of the new general hospital.

Municipal Research Expert Visits Dayton's Health Department.—L. G. Lindholm of the New York Bureau of Municipal Research visited Health Officer Light recently and conferred with him concerning various problems confronting the local department. He expressed a favorable opinion of the various public health activities and especially of the work of the Visiting Nurses' Association.

Cleveland School Authorities War on Disease.—Dr. E. A. Peterson, director of medical inspection in the public schools, has launched a campaign to restrict communicable diseases. Fifteen physicians and twenty-one nurses began work on September 15. Every boy and girl in the elementary grades will undergo a complete physical examination and records will be kept on a card-index file. Especial attention will be given to the restriction of communicable diseases.

County Commissioners Cannot Provide Public Comfort Stations.—In a recent ruling Attorney-General Hogan held that county commissioners in Ohio cannot install comfort stations for the use of the general public. He holds that only such toilet accessories may be provided as are necessary for official use by county officers in county buildings. A movement has been on foot in several counties to build comfort stations for the general public. The law in this respect should be amended.

Military Surgeons Meet.—The annual meeting of the Association of Military Surgeons of the United States to be held in Cincinnati during the week, September 29 to October 2, inclusive, presented a program of unusual excellence. A number of semipublic meetings were arranged: a reception to Surgeon-General William C. Gorgas on the evening of September 29; a public meeting of the association on September 30, at which the insignia of the association was to be presented to visiting delegates, and at which addresses were to be made by the mayor of the city, the governor of the state, the president of the local academy of medicine, Dr. Allen B. Thrasher, and others. On the afternoon of October 1, a visit was arranged to the new Cincinnati General Hospital, followed by an inspection of the First Field Hospital, Medical Department, Ohio National Guard, at the Zoological Garden and supper at the garden. Dr. Rufus B. Hall is chairman of the reception committee. A banquet was also tendered General Gorgas on the evening of September 28.

PENNSYLVANIA

Official Bulletin of Health.—Director James F. Edwards of the Department of Public Health of Pittsburgh, has begun the issue of a monthly bulletin known as "*The City's Health*," the first issue of which appeared this month and is devoted to the care of babies.

Personal.—Dr. Olin K. McGarrah, Altoona, has been appointed medical inspector for the Department of Commerce and Labor for Altoona and Juniata, Blair County.—Dr. Thomas H. A. Stites, Scranton, chief inspector of dispensaries of the State Board of Health, has been appointed medical director of the new State Sanatorium, Hamburg.—Dr. Karl Schäffle has succeeded Dr. Stites as inspector of dispensaries.

Meeting of State Medical Society.—The meeting of the Medical Society of the State of Pennsylvania held in the Carnegie Institute, Pittsburgh, September 21-24, was attended by over a thousand members. The secretary reported a net increase during the past year of 499 members. The well balanced scientific program commanded the interest of specialist and general practitioner. Numerous clinics were conducted at the local hospitals preceding and following the scientific meetings. The commercial exhibit, with the registration bureau, was housed in the foyer of the Carnegie Music Hall. Here, too, was the scientific exhibit where the University of Pittsburgh showed charts and drawings made by students, together with pathologic specimens from the university's museum.

A public meeting was held on the evening of the 22d, at which Prof. L. O. Howard, Washington, D. C., gave a stereopticon lecture on "Some Insects that Carry Disease"; and on the following afternoon an open meeting for women was conducted by the Committee on Public Health Work Among Women. The ninth annual banquet and conference of secretaries of county societies was held at the University Club on the evening of September 22.

Dr. John B. McAlister, Harrisburg, was elected president.

TENNESSEE

Personal.—Drs. Eugene M. Holder, Otis S. Warr and Herbert T. Brooks, Memphis, have returned from abroad.

Pellagra Survey.—Dr. Blackburn G. Tucker, Nashville, who has just completed the sanitary survey of the tenth civil district, has found in one community forty-two actual cases of pellagra, seventeen in males and twenty-five in females, and eight suspicious cases. Poor food-supply and bad hygiene were found present wherever the infection was heaviest. All the patients were white.

TEXAS

Personal.—Dr. and Mrs. Edward H. Cary, Dallas, and Dr. J. Bedford Shelmire, Dallas, have returned from abroad.

Campaign against Hookworm.—The campaign against hookworm will be begun about October 1. Every school-child in the county will be examined and treatment will be furnished free at four depots in the county—September 5 marked the end of the campaign against hookworm in Bell County. The state hookworm commission made 200 examinations, but found only one case.

Field Work against the Hookworm.—Dr. E. M. Outlaw of Palestine has been appointed field director of the hookworm commission to succeed Dr. O. H. Judkins, who resigned to take charge of the health-administration train of the State Board of Health. Dr. Outlaw will extend the campaign in Nacogdoches County another week, making it close about October 1. Of 564 children of school age examined within the county, 332, or nearly 59 per cent., were found infected. The general percentage of infection is about 34 and that in the smaller Mexican population over 90.

UTAH

Home from Abroad.—Dr. Richard A. Pearse, Brigham; Dr. and Mrs. Fred W. Taylor, Provo; Dr. and Mrs. Andrew J. Hosmer, Salt Lake City; Dr. and Mrs. Ezra C. Rich and family and Dr. and Mrs. Le Roy Pugmire, Ogden, have returned from abroad.

Roof Garden Sanatorium.—Dr. Crayton C. Snyder, physician of Salt Lake County, has opened an open-air tuberculosis ward on the roof of the Salt Lake County Hospital. He has caused two tents to be erected on the roof which will accommodate about twenty patients and there is still sufficient space for putting up tents for ten additional patients. A bathroom and a diet kitchen have also been established on the roof of the hospital.

VIRGINIA

Hospital Opened.—The New King's Daughters' Hospital at Portsmouth was formally opened, September 10.

Personal.—Dr. Edward E. Feild, Norfolk, has returned from abroad.—Dr. Powhatan S. Chenk has received a strong endorsement from the Norfolk Medical Association for renomination as health commissioner of the State.

To Study State Hospitals.—Dr. Henry W. Dew, Lynchburg, a member of the State Epileptic Board and V. S. Stevenson, Toano, chairman of the board of Eastern State Hospital, Williamsburg, have been commissioned by the General State Hospital Board to make a tour of inspection of state hospitals in New York, New Jersey, Pennsylvania, Indiana, Illinois and Ohio, making a report of their observations to the general board, on their return.

Bacteriologist Wanted.—The board of health of Richmond desires a man to fill the position of city bacteriologist at a salary of \$2,000 a year, to fill the vacancy caused by the resignation of Aubrey H. Straus who became a member of the faculty of the Medical College of Virginia.

New Society Organized.—Physicians of Dinwiddie County and Petersburg met in Petersburg September 15, organized the Dinwiddie County Medical Society, a component part of the Medical Society of Virginia, and elected the following officers: president, Dr. William C. Powell, Petersburg; vice-president, Dr. Edward W. Perkins, Reams; secretary, Dr. Leverette S. Early, Petersburg; and treasurer, Dr. Charles S. Dodd, Petersburg.

GENERAL

Congress Postponed.—The meeting of the Fourth International Congress on Home Education and the eighth annual meeting of the American School Hygiene Association, scheduled to be held in Philadelphia the last week in September, have been postponed on account of war conditions abroad. The next meeting of the American School Hygiene Association will be held early in 1915.

Ophthalmologists to Meet.—The nineteenth annual meeting of the American Academy of Ophthalmology and Otolaryngology will be held in Boston, October 19 to 21, with headquarters at the Hotel Copley-Plaza, under the presidency of Dr. James M. Ray, Louisville, Ky. Prof. Harvey Cushing of Harvard Medical School will be the guest of honor of the academy and will deliver an oration on "Perimetric Deviations Associated with Pituitary Lesions."

Obstetricians and Gynecologists Meet.—The American Association of Obstetricians and Gynecologists held its twenty-seventh annual meeting at Buffalo, September 15 to 17, and elected the following officers: president, Dr. Charles L. Bonfield, Cincinnati; vice-presidents, Drs. Asa B. Davis, New York City, and K. I. Sanes, Pittsburgh; secretary, Dr. E. Gustav Zinke, Cincinnati (reelected); treasurer, Herman E. Hayd, Buffalo; and executive council, Drs. John W. Keefe, Providence, R. I.; Xavier O. Werder, Pittsburgh; Miles F. Porter, Fort Wayne, Ind.; Louis Frank, Louisville, Ky.; Charles N. Smith, Toledo, Ohio, and Hugo O. Pantzer, Indianapolis.

Plague in New Orleans.—Since the last report of bubonic plague published in THE JOURNAL for September 26, the following human cases have been found:

No. 26, Clermerice Alexander, colored female, 824 Burgundy street, age 40, who became sick September 21, with a right femoral bubo.

No. 27, John J. Vath, white male, baker, 1463 Bourbon street, became sick September 20 with septicemic type, and died September 22.

No. 28, Mrs. Schuler, white female, age 18, 910 Elysian Fields avenue, became sick September 21 with right femoral bubo.

One hundred and thirty-seven rodent cases were discovered up to September 24. For the week ended September 19, 89 vessels had been fumigated, and 3,785 freight cars inspected. Six freight cars were condemned, and 2,081 were rat-proofed. 8,852 rats were trapped. 5,712 rats were examined of 8,782 which were received at the laboratory. The total number of rats captured up to September 19 is 88,395, of which 74,307 have been examined.

Southern Health Exhibition.—In connection with the annual meeting of the American Public Health Association to be held in Jacksonville, Fla., November 30 to December 5, there will be held a Southern Health Exhibition from November 27 to December 6. Plans have been under way for the last six months for this exhibition and a large amount of material has been promised. The exhibition will include material covering a wide range of subjects pertaining to health conservation and will comprise the work of the state and municipal boards of health and private and semi-public organizations throughout the entire South. Such phases of health conservation work as rural sanitation, typhoid fever, hookworm, pellagra, malaria, school medical inspection, infant and child hygiene, midwifery, vital statistics, milk- and water-supplies, food and drug inspection, habit-forming drugs, insect carriage of disease, fly eradication, rat extermination, plague prevention and laboratory work, together with modern sanitary apparatus will be covered by this exhibition.

Missouri Valley Physicians Meet.—The Medical Society of the Missouri Valley held its twenty-seventh annual meeting at Colfax, Iowa, September 17 and 18, under the presidency of Dr. Flavel B. Tiffany, Kansas City. In addition to the papers presented by members of the society, a number of invited guests were present; among these were Dr. Robert H. Babcock, Chicago, who discussed the various forms of

streptococcus and endocarditis, illustrated by specimens; Dr. Campbell P. Howard, Iowa City, who spoke on the diagnosis of mediastinal tumors; Dr. Julius P. Sedgwick, Minneapolis, who demonstrated the use of the Roentgen ray in the diagnosis of diseases of childhood and Dr. John W. Flinn, Prescott, Ariz., who spoke on the recent management of tuberculosis, the keynote being prolonged rest in an outdoor tent. The following officers were elected: president, Dr. Granville N. Ryan, Des Moines, Iowa; vice-presidents, Drs. Albert E. King, Blockton, Iowa, and Joseph C. Waterman, Burke, S. Dak.; secretary, Dr. Charles Wood Fassett, St. Joseph, Mo. (reelected); treasurer, Dr. Oliver C. Gebhart, St. Joseph, Mo. (reelected). The society will hold its spring meeting at Omaha, in March, 1915.

FOREIGN

Memorial to German Physicians.—A large marble bust of Friedrich v. Recklinghausen was recently unveiled in the garden of the University Institute of Pathology at Strasburg, of which he was the founder and where he made many of his important discoveries.—A memorial has just been erected in the grounds of the hospital at Munich in honor of Friedrich Bezold, professor of diseases of the ear from 1877 until his death in 1908.

The Riberi Prize.—The Academy of Medicine at Turin, Italy, calls attention anew to the large prize, \$4,000, which it awards every five years for the best work or discovery in the field of the medical sciences in the interim. Competing articles must be received before Dec. 13, 1916. Published works or manuscripts can be entered in competition but they must be in Italian, French or Latin. For further particulars address the Segretario generale della R. Accademia di Medicina, 81 rue de Po, Turin, Italy.

CANADA

Hospital News.—A hospital is to be built at New Waterford, N. S., by the Dominion Coal Company. The cost is to be \$70,000, and when built the hospital will be maintained by the town of New Waterford.—Kenora, Ontario, has made a grant of \$2,000 to the Royal Jubilee Hospital and another of \$1,000 to St. Joseph's Hospital, both of that town.—Medicine Hat General Hospital (Sask.) has fitted up a house adjoining the hospital as a tuberculosis annex.—In the Royal Victoria Hospital, Montreal, with a service of thirty beds in gynecology, in the last ten years, ninety-four cases of puerperal infection have been admitted; of these, twenty-nine died, a mortality of 30 per cent. During this period of ten years in the same service, 1,553 major operations were performed, with only thirty-seven deaths.

Personals.—Dr. A. Gordon Rice, Toronto, has been appointed divisional surgeon in Ontario for the Grand Trunk Railway, succeeding the late Dr. Bruce L. Riordan, whose partner he was for a number of years.—Colonel Carleton Jones, director-general of the Canadian medical military services, has gone with Canada's first contingent in command of the hospital and ambulance sections.—Dr. W. J. Cooke, Sudbury, Ont., who has been doing graduate work in a London, England, hospital, finding his services not wanted by the war office to whom he had offered them, has sailed on the *Muritiba* as ship surgeon.—Dr. George W. Badgerow, dean of the Golden Square Hospital, London, England, has sailed for England after spending a month visiting his parents in Toronto.

The Canadian Medical Protective Association.—This organization started in Winnipeg in 1901 is proving to be a valuable factor in the prevention of irritating, foundationless suits for alleged malpractice in Canada. The annual report has just been issued and shows substantial assets amounting to bonds valued at \$6,180, a first mortgage of \$3,300, and a cash balance in the bank of about \$1,000. The council's report for the year ending June 30, 1914, shows that one action was actually disposed of by judgment during the year. It was a case of alleged injury from vaccination which was ordered by the health officer of Hamilton during an epidemic in that city. The member of the association was employed by the medical officer of health to vaccinate the various employees in several large industrial establishments. The case was dismissed without trial, being of a frivolous nature. Another action hangs over a British Columbia member for two years but it is thought that it will be abandoned. Seven or eight other cases have occurred in which actions were threatened but not one proceeded with; and there are no outstanding claims against the Association. The association has practically put an end to frivolous

actions against members for the purpose of extorting a settlement in order to avoid publicity. Dr. Robert W. Powell, Ottawa, was reelected president, and Dr. J. Fenton Argue, Ottawa, reelected secretary-treasurer.

WAR NOTES

American Information on Red Cross Work.—There are 171 surgeons and nurses of the American Red Cross who have arrived in Europe for service in the war. Until further contributions are received a greater number cannot be maintained. Surgeons desiring to go should address their applications to the Medical Bureau of the American Red Cross, Washington, D. C., with such letters of reference as they may have. Young men, well recommended, who can stand the severe campaign will be selected.

Alcohol Forbidden in the German Army.—Strict orders were issued at the time of the mobilization of the army that no one should offer or sell to any of the troops any alcoholic drink. The sale of liquor of any kind at the stations was forbidden. A Munich exchange remarks that in 1870 floods of beer were offered to the troops passing through the city on their way to the front and discipline suffered thereby in many instances; the present orderly mobilization, it adds, shows a marked contrast in this respect.

Treatment of Sore Feet.—The British Red Cross Association has issued a leaflet giving directions for the prevention and treatment of sore feet in troops:

1. Feet should be washed with soap and water, and very gently dried—not rubbed.
2. Dab with methylated spirit on cotton wool, except where the skin is broken.
3. When dry, dust with powder composed of equal parts of starch and boracic powder or fuller's earth.
4. Bandage with clean bandage, preferably of domette, not too light—or else put on clean socks. All dirty socks should be washed and dried before use.
5. Reddened skin or recent blisters should be protected by strips of strapping.
6. All corns should be protected by strapping. Open sores require surgical advice, and this should be sought whenever possible, especially if the surrounding redness of the foot is extending.
7. Toenails should be cut short.
8. Hard boots should be well greased—mutton fat is the best. They should be well dusted inside with starch and boracic powder.

Scarcity of Drugs in England.—The *Lancet* states that already the scarcity of foreign manufactured drugs is being noticed in England. Although no instances appear to be reported as yet of the inability to procure small quantities of commonly prescribed German products, the scarcity in the central market must in course of time result in pharmacists being unable to replenish their depleted stocks. Acetylsalicylic acid is about five times the value quoted before the war, and most other coal-tar products have advanced seriously in price. Chloral hydrate has trebled in value, cocaine has doubled; and the salicylates are also much higher. Some British firms have already begun the manufacture of chemical products previously obtained from Germany. It is understood, the *Lancet* states, that an English house is prepared to manufacture the organic compounds of arsenic. The effect of the war is not felt solely in manufactured products as many of the most important vegetable drugs are produced in Belgium, Germany and France; and the new crops: chamomile, arnica, belladonna, digitalis, gentian, colchicum and others were awaiting harvest when the call to arms removed laborers from the fields.

Staff and Equipment of Red Cross Vessel.—The ship "Red Cross" concerning which previous information has been offered, has sailed. Among its equipment were included 3,500 bales of absorbent and bleached cotton, 389,000 yards of gauze, 15,000 pounds of bandages, about 2,000 gallons of chloroform and ether, 10,000 stretchers; and a large quantity of other surgical supplies.

On the Greek ship, which sailed from New York September 9 for Salonica, Greece, was a hospital unit destined for Nish, Servia, which also carried many supplies.

The ten units aboard the "Red Cross" will be distributed among England, France, Belgium, Germany, Austria and Russia. The following is a schedule of the various units with brief biographies of the men composing them:

Unit "A" Director—Dr. Reynold M. Kirby-Smith, Health officer of Sewanee, Tenn., and former captain in the Medical Corps, U. S. Army. A graduate of the University of the South at Sewanee, in 1895. His first assistant will be Dr. John A. C. Colston, a member of the surgical staff of Johns Hopkins Hospital; and a graduate of Johns Hopkins University in 1911. His second assistant will be Dr. M. H. Todd, a graduate of Johns Hopkins University in 1913, formerly member surgical staff of Johns Hopkins Hospital.

Unit "B" Director—Dr. Royce Fayerweather. He is an instructor in orthopedic surgery at Johns Hopkins Hospital, and graduated from

the medical school in 1913. His first assistant will be Dr. Lewis C. Spencer, assistant resident surgeon in Johns Hopkins Hospital. His second assistant will be Dr. H. R. Slack, who graduated from the Johns Hopkins Medical School in 1912, and has since served on the surgical staff of the hospital.

Unit "C".—The director of this unit is Dr. William S. Magill, a graduate of the Université de Paris in 1894 and a member of the Medical Reserve Corps, U. S. A. His assistants are Dr. Philip Newton, Washington, D. C., a graduate of the Georgetown Medical School, 1910, and assistant professor of anatomy; and Dr. Paul H. Zinkhan, a graduate of the same medical college.

Unit "D".—The director is Dr. Robert W. Hinds of Buffalo, N. Y., a graduate of Harvard University in 1910, and a member of the medical corps of the national guard of New York. His assistants are Dr. Fred W. Eastman, a graduate of Columbia University, and surgical intern of the Harlem Hospital; and Dr. Henry M. Shaw, graduate of the Johns Hopkins Medical School, and intern in the hospital.

Unit "E".—The director of Unit "E" is Dr. Charles MacDonald of Salem, N. J., a graduate of Columbia University, and house surgeon of St. Johns Hospital, New York City. His first assistant, Dr. Russell A. Jewitt, of Cleveland, O., is a graduate of Western Reserve Medical School, and his second assistant, Dr. John C. Miller of Shenandoah, Pa., is graduate of Jefferson Medical College at Philadelphia, with five years' medical experience.

Unit "F".—The director, Dr. Howard W. Beal, Worcester, Mass., is a graduate of the Harvard Medical School in 1898. He formerly held a commission in the medical corps of the army, which he resigned in 1903. His assistants are Dr. V. N. Leonard, a graduate of Yale, and of the Johns Hopkins Medical School in 1911, and Dr. William T. Fitzsimons, graduate of Kansas State University, and Resident Surgeon of Roosevelt Hospital, New York City. As director of Unit "G" Dr. Bial F. Bradbury, of Norway, Me., was selected. He is a graduate of the Southern Medical College of Atlanta, Ga., in 1882, and has been for the past twenty-six years in the national guard of the state, occupying a position of chief surgeon with the rank of lieutenant-colonel. His first assistant, Dr. R. H. Newman, Knoxville, Tenn., is a graduate of the University of Louisville, and surgeon for the Louisville & Nashville R. R. and the Southern R. R., and captain of the medical corps, N. G., of Tennessee. His second assistant, Dr. John Lancer, is a graduate of Columbia University Medical School in 1905, with surgical experience as intern in the St. Francis Hospital, the New York Lying-In Hospital; also pediatrician at the Fordham University Clinic, New York.

Unit "H".—Dr. Edward H. Egbert, Washington, D. C., is director of this unit. He is a graduate of Dartmouth Medical School, and Baltimore Medical College in 1903. His assistants are Dr. Brown S. McClintic, Peru, Ind., and Dr. Arthur M. Zinkhan, Washington, D. C.

Unit "I".—Dr. Charles H. Sanders, a graduate of Georgetown University Medical School has been selected as director of this unit. His assistants are Dr. J. F. Spearman, graduate of the College of Physicians and Surgeons of Baltimore; Dr. Grover A. C. Stern, Washington, D. C.

Unit "K".—Dr. Cary A. Snoddy is director; his assistants are Dr. Fred G. Benton, New York City; and Dr. Walcott Denison, graduate of Washington University, St. Louis, Mo.

In the "Servian Unit" the director is Dr. Edward W. Ryan, who has served for the past two years with the American and Mexican Red Cross Societies. His assistants are Drs. James C. Donovan and William P. Ahern, all are graduates of Fordham University Medical School, New York.

LONDON LETTER

LONDON, Sept. 16, 1914.

The War

A scheme has been devised whereby free medical attendance with medicine and appliances will be provided dependents of soldiers and sailors serving with the colors who need relief. The scheme originated in a proposal made by the British Medical Association and the Pharmaceutical Society. They offered to the government the cooperation of their professions for providing these dependents with free medical attendance and medicines and appliances at cost. The executive committee of the Prince of Wales' Fund (a fund now amounting to over \$100,000 subscribed in response to an appeal by the prince for the relief of distress consequent on the war) has decided to defray the cost of medicines and appliances. On the initiative of the British Medical Association physicians throughout the country have agreed to undertake the work of those who have abandoned their practices for military service and to conserve them until their return. These are only examples of the general spirit of patriotism evoked in all classes by this titanic struggle. Elaborate arrangements have been made by the admiralty for dealing with sick and wounded from the fleet. They are adapted to meet the emergency of a general action and also the needs of single vessels which may suffer in minor engagements. The British navy has eight hospital ships, of which five are in home waters. Their duty will be to collect the wounded from any general action. They carry a full complement of medical officers and dressers. They will convey the wounded to the large naval hospitals where the staff of medical officers is reinforced by civilian consultants. Should any pressure arise in the hospitals, convalescents will be transferred as quickly as possible to homes or inland hospitals.

Sir William Osler on Military Hygiene

Addressing officers and men in a military camp on the prevention of disease in active service, Sir William Osler remarked that formerly it had been said that an army marched on its belly; now it marched on its brains. Only by utilizing fully existing knowledge in all grades, from the commander-in-chief to private, was the maximum success obtainable. Bacilli were a more important enemy than bullets. In the South African War the former were responsible for 14,000 deaths, the latter for only 8,000. So far only one great war had been waged with the weapons of science against these unseen foes. The Japanese went into the Russian campaign prepared as fully against bacilli as bullets, and their percentage of deaths from disease was the lowest recorded. We were not likely to have to fight three of the greatest scourges of armies—typhus, malaria and cholera, though the possibility of the last had to be considered. But there remained dysentery, pneumonia and typhoid. Dysentery could be prevented only by boiling water. Pneumonia was much more difficult to prevent. Coughs and colds should not be neglected. The exhaustion produced by long marches, by exposure to wet and cold, and by wounds lowered the resistance of the body so that the pneumococci could attack the lungs. Above all others typhoid was the most fatal disease in modern warfare. Over and over again it had killed thousands before they reached the fighting line. In the South African War it killed more than the bullets of the Boers. Osler advised his hearers to take advantage of inoculation to protect them against this disease. In the British army, unlike foreign ones, inoculation is voluntary.

PARIS LETTER

(Delayed in transmission)

PARIS, Sept. 17, 1914.

The Census and Provisioning of Paris

At this writing the German Army, which a few days ago was still threatening Paris, has withdrawn considerably. Notwithstanding, the military authorities, in whose hands all powers have been concentrated since the very beginning of the war, has judged it prudent to count the present population in preparation for a possible siege of Paris and of the placing of the population on rations which might be made necessary by blockade. It is interesting to note that in the questionnaire addressed to each household is a special inquiry with regard to persons requiring a special diet, that is, infants under 15 months of age and invalids requiring certain foods.

The results of the census indicate that the number of households in the city is about 887,267, representing 2,006,786 persons. In 1911 the figures for the quinquennial census were about 1,123,634 households, or about 2,833,351 persons. There has thus been a diminution of about 30 per cent., and this decrease has continued, for there have been a number of departures recently. Under these conditions, it may be seen that Paris can be provisioned without great difficulty. Up to the present the capital has not had to suffer in this respect. Even as to milk, neither children nor invalids have at any time been deprived of this necessary food, and the supply has always been sufficient so that even adults can use the amount of milk to which they have been accustomed. Still, just now, the military operations going on in several dairy regions render commercial traffic very difficult when they come near the city. In spite of the sudden changes of railroad timetables, necessitated by army movements, however, and in spite of the necessity for relegating to the second place everything which is not directly connected with measures of national defense, the milk-dealers appear to be able to supply the needs of the population of Paris. The milk, though it arrives later than under ordinary circumstances and at very irregular intervals, is received in sufficient quantity. In view of the delay in delivery, the dealers recommend their customers to boil each evening all the milk which they may need to use next day before the arrival of the next supply.

The War and University Life

The council of the Université de Paris has just met under the presidency of M. Liard, vice-rector of the Académie de Paris. It has taken measures for the opening examinations in October and for the resumption of lectures in the various departments of the university the beginning of November.

The War and Public Hygiene

The prefect of the Seine has just posted on the walls of Paris large notices enjoining on the owners of buildings the

measures of cleanliness and hygiene necessary to protect the public health, such as the emptying of cess-pools, the removal of rubbish, the burning of refuse, the cleanliness of courts and stairways, the emptying of stagnant water, etc.

It is regrettable indeed that under such serious circumstances as the present, unscrupulous persons do not hesitate to exploit public credulity by their brazen advertisements. Thus, everywhere among the official notices are seen small posters headed "Public Hygiene" and as a subheading "To Avoid Epidemics." The poster begins with a list of a series of precautions having to do with: avoidance of alcoholic excesses, etc. Then comes the following advice: "Drink only water in which has been dissolved a packet of LITHINES of Dr. X. . . . Water thus prepared is a healthful, economical and slightly effervescent mineral water. . . ."

The Mustering into the Army of Men who Have Regained Their Health After Being Invalided Out

M. Millerand, minister of War, has just addressed to the president of the republic a report on the subject of exemptions from military service. According to the present regulations, former soldiers who have been invalided out are definitely released from all military obligations, whatever their age or state of health. It is the same with regard to young men who have been exempted from military service by examining boards. Statistics show that the number of young Frenchmen who are thus lost to the national defense is considerable, taking into account the whole country. While some of them are really unfit for armed service, the physical condition of others has improved since they were examined and dismissed or exempted from service. Not to take into account at the present crisis those who are now fit for service would be negligent in the extreme. A law passed last year requires young men exempted from service to present themselves for examination (1) at the time when they would pass into the reserve of the active army (at the age of 24); (2) five years afterward; (3) at the time when they should pass into the territorial army (at the age of 34). Those who at any one of these examinations seem fit for military service are immediately subject to the obligations of the class to which they belong by age. Carrying out this idea, the minister of war has required all exempted and invalided men to undergo medical examination. It is to be presumed that many of them will be found capable of taking part in the defense of the country.

BERLIN LETTER

(Delayed in transmission)

BERLIN, Sept. 5, 1914.

The War

Among the efforts for mutual aid which are being carried on by physicians may be mentioned the lectures on military medicine. Such lectures have been held especially in Berlin under the auspices of the medical department of the army. One of the most notable was given by Wassermann, who even before the war bore the title of general staff surgeon. He spoke on the combating of epidemics in time of war. The general importance of this address justifies a somewhat extensive reproduction.

PROPHYLAXIS OF EPIDEMICS

In view of the probability of the introduction of plague, small-pox, cholera, epidemic typhus, and dysentery from Russia and of the fact that typhoid is epidemic on the eastern frontier of France and in Belgium, special precautionary measures have been taken. The army is accompanied by consulting hygienists from the ranks of our best university instructors and by a whole staff of bacteriologically trained army surgeons. Moreover, the base hospitals have portable bacteriologic laboratories and there are also available for investigations the Berlin Institute for Infectious Diseases, the laboratory of the Kaiser Wilhelm Academy and the Imperial Health Office. The most important thing in controlling an epidemic is the discovery of early cases, not only persons who are clinically sick, but more especially the so-called germ carriers. These are the most dangerous because they are not confined to bed and may infect their environment. They must be kept under constant bacteriologic supervision as also the sick that are received from Belgium and France, who, although they have been vaccinated against typhoid, may still be germ carriers.

In western Germany our population has been made nearly free from contagious diseases through the organized anti-typhoid campaign with the aid of the institutions at Celsen-

kirchen and Saarbrücken. However, should typhoid appear in the army from contact with the French, the patients must not be sent to the rear but must be isolated. The isolation rooms in the hospitals must be protected with gauze or wire netting at the windows from the access of flies and mosquitoes, as experience has shown that these are likely to convey disease germs to foodstuffs. The same care must be used in regard to the latrines, and no stagnant water must be permitted in the neighborhood of the hospital. If the pools cannot be drained they should be sprayed with crude petroleum. Especial care must be taken of drinking water, and the so-called good spring water should be strenuously avoided and only deep water obtained through a well, or boiled water should be used. If necessary, water should be sterilized by the sterilizing apparatus which is carried with the troop. In the same way supervision of the help and cooks, especially the women, should be exercised as epidemics have been known to arise from bacilli carriers, even from women potato-peelers, although they were not sick. The sterilization should be carried out by steam, or chemical disinfectants, of which a soap-cresol solution is most to be recommended. This can be prepared extemporaneously by mixing with 950 c.c. of hot water, 25 gm. of soft potassium soap and 25 gm. of a 10 per cent. solution of crude phenol (carbolic acid). Milk of lime is to be recommended for the same purpose.

VACCINATION AGAINST TYPHOID AND CHOLERA

In addition to these measures, protective vaccination is to be recommended in threatened typhoid and in cholera, and this should be done in all troops which enter a marshy region. Typhoid vaccination should be made in the neighborhood of the clavicle, never in the arm or the back, lest the use of the gun be interfered with, or the soldier cannot lie down comfortably, for typhoid vaccination sometimes produces severe reactions. For this reason it is preferable to make the injection near evening. Five-tenths c.c. is first injected and after seven days 1 c.c., and if necessary a third injection is made. Naturally nurses should also be injected. In cholera at least two injections should be made, beginning with 0.5 c.c. and after six days 1 c.c. The reaction is slighter than with typhoid. In dysentery the feces and blood should be examined to determine the nature of the disease.

PLAGUE, TYPHUS, RELAPSING FEVER AND MENINGITIS

Plague requires the greatest care, the pneumonic form being the most dangerous, the bubonic form less menacing. In every case of pneumonia, pulmonary plague should be borne in mind, for the course of this disease in the first few days is just like that of pneumonia. Cases of typhus should be isolated and the barracks placed at a distance from the rest of the hospital. The windows and doors must be kept open night and day, winter or summer, as it is only by diluting the unknown virus with fresh air that physicians and nurses can escape contagion. If this precaution is neglected, infection is inevitable. Relapsing fever is efficiently treated with salvarsan, and cerebrospinal meningitis with the anti-meningitic serum.

Health of Troops at the Front

Reports from the firing line show that our surgeons have been on duty with the same unremitting activity as our soldiers, as is easy to understand. According to a communication from a young colleague, he has in the last few days at times been in the saddle for thirteen hours and then worked for the same length of time in the hospital. The health of our troops is characterized as good by an official report of the chief of the medical service in the field. So far no epidemics have arisen. To be sure, a part of our troops are in a hostile country which has not enjoyed the same hygienic advantages as our home country, and whose inhabitants are many of them carriers of the germs of infection, but the extensive foresight of the German military organization is effective against even these obstacles. Vaccination has been strictly enforced and if necessary will be carried out among the hostile inhabitants. Apparatus for examinations for typhoid, cholera and dysentery, and vaccination material are carried with the army. Expert hygienists are found in the ranks of our army surgeons. In our own country there is no notable increase of infectious diseases. In this respect the prisoners of war are carefully watched. The wounds received in the regular course of war show a good tendency toward healing. The German first treatment, especially the German bandage, are showing good results. The bandages and dressings at the front remained in good position during the in orthopedic surgery at the rear.

Marriages

ELLEN BRADFORD MURRAY, M.D., Ypsilanti, Mich., and Edward F. Brown of Marlboro, Mass., September 19.

PAUL GUTHRIE MOORE, M.D., Cleveland, Ohio, to Miss Henrietta Louise Mallory of Sarnia, Ont., September 16.

AARON C. CONAWAY, M.D., Marshalltown, Iowa, to Miss Rhea Ireland Butler of Chicago, September 26.

JOHN QUINCY NEWELL, M.D., Jennings, Okla., to Mrs. Bacon of Oklahoma City, Okla., September 10.

CHARLES JUDSON BRUNSON, M.D., Adamson, Okla., to Mrs. Emily J. Reese, McAlester, Okla., recently.

VINCENT J. MULVEHILL, M.D., Carrolltown, Pa., to Miss Delrose Williams of Altoona, Pa., recently.

CHARLES H. MACPHERSON, M.D., to Miss Lora Frances Anderson, both of Modesto, Ill., recently.

HADA M. BURKHART, M.D., Rock Island, Ill., and Martin R. Carlson of Moline, Ill., September 17.

LAWRENCE TYLER POST, M.D., Baltimore, Md., to Miss Helen Sharp of Cranford, N. J., September 7.

LOUIS GEORGE HOFFMAN, M.D., to Miss Cora Hazel Bryan, both of Chicago, September 15.

CLEO EARL WEAVER, M.D., to Miss Pearl Hendry, both of LaBelle, Fla., September 15.

Deaths

John Lanson Adams, M.D. College of Physicians and Surgeons in the City of New York, 1886; a Fellow of the American Medical Association; a member of the American Laryngological, Rhinological and Otological Society, American Ophthalmological Society, American Otological and New York Otological Society; attending surgeon to the New York Eye and Ear Infirmary, Bloomingdale Clinic and West Side German Dispensary, consulting ophthalmologist and otologist to the New York Hospital, Lying-in Asylum, Manhattan State Hospital and New York Nose, Throat and Lung Hospital; one of the most prominent specialists on diseases of the eye, ear, nose and throat of the United States; was instantly killed, September 25, by an accidental fall from a fourth-story window of his house in New York City, aged 54.

John C. Fleming, M.D. Jefferson Medical College, 1871; a member of the staff of the Mercy Hospital, Burlington, Ia.; formerly city health officer and city physician of Burlington, physician of Des Moines County and local surgeon for the Burlington System, died suddenly from cerebral hemorrhage, while making a professional call in that city, September 15, aged 65.

Ernest Saxl, M.D. K. K. Deutsche Karl-Ferdinand-Universität, Prague, Bohemia, 1893; a Fellow of the American Medical Association; professor of clinical ophthalmology in the American Medical College, St. Louis; a well-known oculist and musical expert of St. Louis; died in his apartment in that city, September 11, from hemorrhage of the lungs, aged 36.

John Andrew O'Keefe, M.D. Long Island College Hospital, Brooklyn, 1884; a Fellow of the American Medical Association; medical examiner of Providence County, R. I., and for twenty years a medical officer of the Rhode Island Militia; died suddenly in his office in Providence, September 14, from heart disease, aged 51.

Walter Frederick McCabe, M.D. College of Physicians and Surgeons in the City of New York, 1895; a member of the Minnesota State Medical Association and well known as a roentgenologist of Duluth; died at his home in that city, September 11, from long-standing disease of the spinal cord, aged 50.

Edward Tyler Doty, M.D. University of Michigan, Ann Arbor, 1870; a member of the Missouri State Medical Association and once president of the Joplin and Jasper County medical societies; a veteran of the Civil War; died at his home in Anderson, Mo., September 13, from gastritis, aged 70.

Bernard E. McShane, M.D. College of Physicians and Surgeons, Chicago, 1895; a member of the Kansas Medical Society and a practitioner of Alton, Kans.; but later a resident of Riverside, Cal.; died at the home of his sister in Milwaukee, Wis., September 18, aged 43.

John McGraw Woodbury, M.D. Bellevue Hospital Medical College, New York City, 1881; under two administrations, street cleaning commissioner of New York City; physician and surgeon, sanitary inspector and organizer of the first board of health of Ponce, Porto Rico during the Spanish-American War in which he served on the staff of Major General James H. Wilson; died at his home in Southampton, Long Island, N. Y., September 24.

John Hess Burkett, M.D. Miami Medical College, Cincinnati, 1871; a member of the Medical Society of the State of Pennsylvania and for many years president of the Robinson Township, Allegheny County, Pa., school board, township auditor and justice of the peace; died at his home near Carnegie, Pa., September 16, aged 74.

Robert Brown Johnson, M.D. Medical College of the State of South Carolina, Charleston, 1847; a Confederate veteran; for nearly half a century a practitioner of Mississippi and since 1900 a resident of Kosciusko, Miss.; died in a hospital in Camden, S. C., September 3, aged 89.

Adolphus G. Wood, M.D. College of Physicians and Surgeons, Keokuk, Ia., 1859; at one time postmaster of Walkersville, Mo.; president of the National Bank of Lentner, Mo.; and a prominent practitioner and citizen of that place; died at his home, September 6, aged 83.

Archibald Dann, M.D. University of Pennsylvania, Philadelphia, 1866; formerly a member of the staff of the Rochester General Hospital and of the consulting staff of the Rochester State Hospital; died at his home in Rochester, N. Y., September 6, aged 69.

Edwin Kindel Williams, M.D. College of Physicians and Surgeons, Baltimore, Md., 1883; a member and once first vice-president of the Arkansas Medical Society; died at his home in Arkadelphia, Ark., September 11, from pneumonia, aged 50.

George W. Robb, M.D. Detroit College of Medicine and Surgery, Detroit, Mich., 1894; a Fellow of the American Medical Association; died at his home in Flushing, Mich., September 14, from pernicious anemia, aged 58.

Albert E. Brandt, M.D. Pulte Medical College, Cincinnati, 1878; of Harrisburg, Pa.; a veteran of the Civil War; died at the home of his granddaughter in Mechanicsburg, Pa., September 7, from heart disease, aged 78.

Ashael H. Alderman, M.D. National Homeopathic Medical College, Washington, D. C., 1895; a veteran of the Civil War; died at his home in Washington, D. C., September 13, from heart disease, aged 71.

Stephen Henry Hussey, M.D. Medical College of Ohio, Cincinnati, 1887; formerly of Bowersville, Ohio; was found dead in his room in the Lexington Hotel, Chicago, September 15, from heart disease, aged 63.

John C. Barker, M.D. University of Louisville, Ky., 1893; a member of the Kentucky State Medical Association; died at his home in Hustonville, Ky., September 10, from nephritis.

John Eaton Burris, M.D. Eclectic Medical College of the City of New York, 1876; a veteran of the Civil War; died at his home in New York City, September 10, aged 68.

John T. Nolan, M.D. Jefferson Medical College, 1908; since 1912 a medical inspector of the city schools of Philadelphia; died at his home in that city, August 27, aged 28.

Arrillis Irving Griffith, M.D. Kentucky School of Medicine, Louisville, 1881; formerly of Stoutsville, Mo.; died at his home in Toledo, Ohio, September 3, aged 71.

Samuel T. Rawlins, M.D. Cincinnati College of Medicine and Surgery; 1873; a Confederate veteran; died at his home in Georgetown, Ky., September 4, aged 73.

Eugene Nesbit Freeman, M.D. Vanderbilt University, Nashville, Tenn., 1885; of Grafton, Cal; died at Knights' Landing, Cal., August 22, aged 53.

John Harry Lane, M.D. Washington University, St. Louis, 1876; died at his home in Medora, Ill., September 7, from heart disease, aged 70.

John W. Hogg, M.D. Medical College of Georgia, Augusta, 1877; was found dead in bed at his home in Senoia, Ga., September 8, aged 62.

August B. Bunsen, M.D. University of Heidelberg, Germany, 1853; died at his home in Freeport, Ill., September 3, aged 84.

Fred Henry Huning, M.D. Bellevue Hospital Medical College, 1896; died at his home in Ventura, Cal., June 27, aged 43.

William N. Brickey (license Arkansas, 1903) died at his home in Little Rock, Ark., August 31, aged 60.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

G. H. BRINKLER—"FOOD EXPERT" *

A Quack Against Whom the Federal Authorities have Issued a Post-Office Fraud Order

G. H. Brinkler of Washington, D. C., has for some time been advertising as a "food expert" and "food specialist." His business was conducted on the mail-order plan. He sold no foods but purported to sell expert advice on dieting. In effect, Brinkler pretended to treat and cure any disease by prescribing a particular diet for the individual suffering from that disease.

Brinkler is neither a physician, a pharmacist nor a chemist yet, until the federal authorities put him out of business, he obtained money from people for opinions that he expressed on medicine, pharmacy and chemistry. Brinkler, as a quack, sold worthless advice instead of drugs. In the hearings before the Committee on Interstate and Foreign Commerce, Dr. L. F. Kebler, Chief of the Division of Drugs of the Bureau of Chemistry, U. S. Department of Agriculture, referred to the fraudulent business carried on by G. H. Brinkler. Dr. Kebler said:

"Through published advertisements and otherwise this party enters into correspondence with the sick and the well and by specious promises induces them to purchase letters of advice pertaining to diet. He represents that the advice given in these letters, if followed, will effect a cure of all diseases, including cancer, Bright's disease, diabetes, etc., and that it will bring about and maintain a permanent state of good health."

Dr. Kebler, after quoting a number of extracts from Brinkler's "literature" to illustrate the nature of the claims made by this quack, continued:

"No one acquainted with the disease or diseased conditions involved would make such representations. According to his own statement, Mr. Brinkler, the promoter of this scheme, is neither a physician, a pharmacist nor a chemist. It would, therefore, appear that these claims and representations are made for the purpose of misleading and deceiving the public."

BUTTER THE CAUSE OF DEAFNESS!

Brinkler's advertisements were usually headed "Popular Educational Food Campaign," and were so arranged as to give the impression that Brinkler himself was connected with some department of the government. His claims and statements indicate that the fraudulence of his operations was exceeded only by his ignorance of the subject in which he professed to be a specialist. According to Brinkler, certain foods cause tumors, cough and "catarrh"; too much cream, butter and cheese may produce deafness and discharging ears; some foods "make one Nervous, Shy and Low-Spirited," others produce "the finest quality of Vitality, Electricity, Magnetism or Intelligence."

In his advertising, Brinkler urged that ten cents be sent for his "valuable instructive booklet" entitled, "The New Brainy Diet System." The inference was that this booklet would give valuable advice on diet; as a matter of fact, it was merely an advertising pamphlet devoted to the further exploitation of Brinkler and his alleged system. A large part of the pamphlet consisted of testimonials of the usual type, and those familiar with the literature of quackery will not be surprised to learn that one of the testimonials was from Willard H. Morse, M.D., F.S.Sc. (Lond.), that prolific producer of fake analyses and worthless testimonials. It

* This article gives in an abbreviated form the Government's case against Brinkler. The matter will be reprinted in pamphlet form (price 4 cents) in greater detail.

appeared in the form of a "report" to the "Society of Science, Letters and Arts of London"—a "society" to which many quacks belong, the "fellowship" costing only one guinea (\$5.00). "Fellows" of the "society," may append the letters "F.S.Sc. (Lond.)" to their names, and this makes a valuable advertising asset with which to impress the ignorant.

In addition to testimonials, Brinkler employed the tactics common to quacks, especially that of attempting to frighten his prospective victims. "REMEMBER MY ADDRESS IN THE HOUR OF APPROACHING DEATH," he gressomely suggested in large, black-faced type. Every booklet sent out by Brinkler contained a "Question List" blank. This was to be filled out by the recipient and sent back to Brinkler with \$1.00. Those who sent the dollar with the filled-out blank received a letter stating that the various ailments described on the blank were due to improper diet. No advice was given, however, as to what constituted correct diet, but Brinkler stated that he would give advice regarding the correct diet to use in the case on the receipt of \$40, \$60 or \$75, as the case might be.

The Solicitor for the Post-Office Department reviewed all the evidence and papers in the case and reported the matter in part as follows:

"The business of Mr. Brinkler is conducted through, and by means of, the United States mails. His advertisements appear in a large number of magazines of general circulation, and are all substantially to the same effect."

A typical advertisement was then quoted and attention called to some of the phrases contained in it. The report continues:

"The use of the expressions 'Popular Educational Food Campaign,' 'Official Investigating Committee,' and 'Food Expert,' Dept. 21E, [the 'key number' of the advertisement] Washington, D. C., is calculated to lead the reader to believe that the advertiser is connected in some way with the government, and that many persons are induced to remit ten cents for the booklet advertised under this belief is shown by the evidence. The booklet entitled 'The New Brinary Diet System,' which is sent to those induced to remit ten cents to the advertiser, does not contain an exposition of the 'new brinary diet system,' or give the purchaser any practical advice on diet, as the advertisement would lead one to believe, but is made up of matter advertising the system and Brinkler's alleged knowledge and ability. It consists of 48 pages, 28 of which contain nothing but alleged extracts from testimonials."

SOME OF BRINKLER'S CLAIMS

Then followed many quotations from the booklet to show the character of the matter it contained. These are a few of the quotations:

"The many ills flesh is supposed to be 'heir to' are simply the result of malassimilation of food material, causing rebellion of the organs of the body against overwork in some cases, and insufficient nourishment in others."

"The cure of disease, therefore, lies in correcting the lack of proportionality—restoring the balance—by rearranging the diet so that the unsuitable preponderating elements are reduced and the neglected necessary elements are increased."

"The severest cases of vitiated Blood Diseases, congested organs, any kind of cold, fever, or nervous complaint, etc., can be cured by a judiciously selected diet."

"GALL STONES are dissolved and expelled by correct foods without an operation."

"APPENDICITIS, which is the result of inflammatory conditions due to wrong foods, is permanently cured by proper foods, without an operation. Urgency instructions by wire when necessary."

"Coughing, expectoration, blood-spitting and night-sweats have been cured within a few weeks in some cases."

"CANCER, which is not a living thing as many suppose, but an accumulation of decomposed matter, the products of unassimilable waste elements which the excretory organs have failed to eliminate and which the person has been unable to turn into healthy tissue—is dissolved, dispersed and expelled downwards through the excretory organs by curative foods."

"DEVELOPING THE VOICE. There are special foods which will develop the voice when rightly combined and proportioned with other foods to suit the individual, according to the principles of the Brinary Diet System."

"ADULTS SHOULD LEARN HOW TO CONTROL THEIR SEXUALITY BY CORRECT FOODS IN DAILY USE."

"MARRIED WOMEN SHOULD LEARN HOW TO REGULATE THEIR FAMILIES BY CERTAIN FOODS IN DAILY USE."

The report then continues:

"The 'Official Investigating Committee' referred to in the advertisement and also in the booklet as having 'certified to each case' consists of a number of notaries public whom Mr. Brinkler employed for the purpose of going over the original testimonials and comparing them with the printed extracts therefrom, and the certification, it is admitted by the respondent, was not to the truth of the statement of the testimonials, but only to the fact that such extracts were correct copies of original letters."

SOME CASES

In investigating Brinkler's scheme, the post-office inspectors filled out six symptom-blanks and sent them, each with a dollar, to Brinkler for advice. One of these blanks was sent under the name "F. G. Harris" and described a number of more or less vague symptoms. Brinkler's reply to "Mr. Harris" consisted of a repetition of the symptoms given in the blank, followed by the statement that each condition was the result of improper diet. No suggestions were offered as to what constituted a correct diet in "Harris'" supposed case,

LIFE BRAINY

Popular Educational Food Campaign
Striking Effects of Different Foods

NOTE: The New Brinary Diet System was originated by G. H. Brinkler, Food Expert, and is based on the scientific principles of the Food Expert of the United States Department of Agriculture.

YOU probably know something of the effects of different foods. For instance, an excess of starchy (starch-making) foods produces indigestion, flat, milky stools, loss of memory and concentration, drowsiness and inertia. A change to digestible brinary foods such as suitable dairy products, lean and game wild-fowl, and other meats, improves the circulation, and gives a new vigor to the system. The body is then able to assimilate the food, and the system is able to resist the effects of disease. The body is then able to resist the effects of disease. The body is then able to resist the effects of disease.

GENERAL CLASSIFICATION OF FOODS

VITAL OR BRAINY	MUSCLE
STIMULATING	SOLVENTS
BLOOD PURIFIERS OR LAXATIVES	SWEET ELEMENTS

Four booklets which have taught many to cure themselves:

1. The New Brinary Diet
2. Diet versus Drugs
3. Effects of Foods
4. Key to Longevity

DIET

A typical advertisement of Quack Brinkler. The original occupied forty-four square inches.

THE GOVERNMENT PROTECTS THE PUBLIC

The investigation of Brinkler's fraudulent business by the government officials is interestingly described in the memorandum addressed to the Postmaster-General by the Solicitor of the Post-Office Department, Judge W. H. Lamar, and recommending the issuance of a fraud order against Brinkler. On May 22, 1914, Brinkler was called on to show cause on or before June 2, 1914, why a fraud order should not be issued against him. A continuance until June 15, 1914, was granted at the request of Brinkler's attorney, Nathan B. Williams of Washington, D. C. On that date, the hearing of the charges commenced and continued for ten days. Attorney Williams was assisted by Fred B. Rhodes, another Washington attorney, who acted as associate counsel for Brinkler. After the hearing, Brinkler was allowed three weeks in which to file a brief which, when filed, was supplemented later by an additional brief and further evidence.

but Brinkler offered to "undertake" the "case" for \$60—cash in advance. For this amount he promised to send three letters of advice. As the \$60 was not sent, Brinkler sent a "follow-up" letter urging again that the money be forwarded, and stating that he was positive that the Brinkler "food system" would "cure your complaints."

Under the name "E. M. Richardson," a symptom-blank was filled out purporting to come from a man who complained of no particular ailment but who declared that he had involuntary emissions about once a month. "Mr. Richardson" was advised that these emissions were caused by improper diet and would be "completely cured on a digestible brainy diet." Brinkler offered to undertake this case "for \$50, prepaid."

Another symptom-blank, in the name "Walter Hadsel," was filled out describing symptoms that might have been due to carcinoma of the stomach and which were sufficiently serious to call for prompt and definite action. "Hadsel" was told that his condition was due to improper diet and that Brinkler would take the case for \$75, prepaid. Brinkler was "positive that our food system will . . . cure your complaints."

A well-developed case of diabetes in a boy of 15 was described in a symptom-blank filled out under the name "Hamil." "Miss Du Pont" was a supposititious victim who described symptoms that might have been present in a case of serious disease of the uterus. An alleged case of syphilis was described on still another symptom blank under the name "Simcoe." In all of these cases, Brinkler declared that the conditions were due to improper diet and offered to prescribe diets that would cure the complaints, on receipt of the amount demanded. Brinkler asked \$75, prepaid, for the "cure" of the 15-year-old diabetic; "Miss Du Pont's" case, he offered to undertake for \$50, while in the supposititious case of syphilis described under the name "Simcoe," Brinkler advised that "proper diet" would relieve this condition and offered to take the case for \$75. In discussing these various cases, Judge Lamar reported:

"In each of the above tests it developed that the 'analysis and comments' on the case for which the \$1 was paid consisted substantially of a statement that each symptom given by the remitter was caused by incorrect eating and could be relieved by following a course of diet prescribed by Mr. Brinkler. That this advice is given in response to all symptom blanks, no matter what symptoms are shown, was admitted by the respondents. In other words, the return made to the correspondent for his remittance is merely another advertisement of Mr. Brinkler's system. It is obvious, therefore, that the blank has no function if the course thereafter offered for sale by Mr. Brinkler is not purchased, other than to induce the correspondent to remit one dollar in the belief that he is to obtain therefor an analysis of his particular complaints and advice based thereon, when in fact the respondent intends only to reiterate the claims made for his system in the booklet with which the correspondent is already supplied and to quote a large fee for the practical advice which the correspondent was expected to receive for each remittance theretofore made by him."

At Brinkler's hearing the Post-Office Department had the assistance of some well-known practicing physicians of Washington, D. C. Quoting further:

"These physicians were shown the symptom blanks sent to Mr. Brinkler by the inspectors and described above, and they agreed that the symptoms therein stated were common to a number of diseased conditions, and that it was impossible to tell from which of these conditions they arose in the cases in question. No evidence was offered by the respondent to controvert this testimony. These physicians testified further to the well-established fact that, as these different conditions required different treatment, in the absence of a diagnosis it was impossible to formulate a correct treatment or to tell whether improper food had caused, or a correct diet would relieve, the symptoms complained of. They also called attention to the fact that nightly emissions about once a month, referred to in several of the cases, were in fact no indication of disease at all, but a normal condition in a healthy man. They also stated that diabetes in a child of 15 was practically incurable and that syphilis was only amen-

able to drug treatment. The symptoms given in the 'Hadsel' case, they testified, might have arisen from cancer or ulcer of the stomach or a number of causes, and called for a most careful personal examination and treatment. Those given in the 'Du Pont' case would come from fibroid tumor, a polypus, a cancer or endometritis, necessitating also a most careful physical examination and perhaps an operation in order to save the patient's life.

"These doctors also testified that the extracts from the booklet quoted above were misleading and in many instances without foundation in fact whatsoever. This is obvious to any one who had the slightest knowledge of medical science. It is apparent from a consideration of these cases that the purchaser of Mr. Brinkler's treatment is not only defrauded of the purchase price, but is subjected to the risk of grave harm in the postponement of proper treatment until too late.

GIRL CLERKS PRESCRIBE TREATMENT

"The evidence shows that G. H. Brinkler is not a doctor and has had no education in medical subjects other than that obtained by the average man. Practically all his knowledge of dietetics has been obtained from reading a number of books on the subject and intercourse with others engaged in business similar to his own. He has in his employ a number of girls none of whom have any knowledge of the subject

REMEMBER MY ADDRESS IN THE HOUR OF APPROACH- ING DEATH

If you do not write now, be sure to put this booklet away carefully for future reference when sickness suddenly attacks you or your friends. • I will send you another copy, to hand to a friend, if you let me know.

To remember my name and address may save valuable lives! When suddenly taken ill, you will not be scared to death through ignorance of the cause of your disease, but an intelligent self-confidence will make you hopeful as long as you have learned the cause and cure of your attack.

Remember, when doctors despair of your life, to the hour of approaching death, that vital or brainy foods have restored the dying to robust health with the help of a competent teacher.

Read my testimonials attentively! They prove my efficiency in the cure of disease by vital or brainy foods.

Incident in a Food Fash

Mrs. Mortimer, 20 Howard Road, Quincy, Vermont, England writes me that she also will be pleased to see any of my Food and Vitality pamphlets that may come to her hands with her husband, who has been the better food system. For Mortimer had learned from the great eye specialist many years ago. He had learned to make a habit of an experience on an expert diet, which he began now serving. For after doctors had pronounced all hope of recovery for his family and he believed that he would not live through the night. He recovered after several days of treatment with the Food and Vitality. All members of the family have now adopted Lactogen and very healthy food. I would want to be mentioned as an introduction when writing for an interview.

G. H. BRINKLER
FOOD EXPERT
WASHINGTON, D. C.

Frightening the victim is a method classic to quackery. Here is a page (greatly reduced) from one of Brinkler's publications in which he attempts to play on the fears of the reader.

other than what he has told them. He has prepared a so-called 'model book' containing paragraphs applicable to a large number of symptoms. These paragraphs ascribe each symptom to improper food and state in substance that a proper diet will cure or relieve them. He has another 'model book' containing paragraphs prescribing a diet for the relief of all these symptoms, from which the letters sent when the course is purchased are made up. Unless a symptom not covered in these models is given, the correspondence is handled in an automatic way by the girl employees, one of them underlining the symptoms given and another specifying the paragraphs to be copied from the 'model book' in the reply, and so on. The same symptoms always elicit the same reply, regardless of the cause of the symptoms. Every case is accepted, no matter how serious the symptoms may be; and while it was testified that where the prospective said he had cancer, valvular heart trouble or any of a few other critical conditions, the paragraph to the effect that the correspondent 'is not paying for an experiment but a permanent cure' was omitted, yet, if a reply is not received in a short time, another letter goes out in which the sufferer is advised that Mr. Brinkler is positive that his 'food system will give you extra vitality and cure your complaints.'

"That wrong eating is a contributory cause in a great many diseases is unquestionable, but it is equally unquestionable that there are other factors; and to pretend to cure all diseases by the methods above described and with an utter ignorance of the cause of the symptoms and a disregard of all factors other than food and drink is to show a reckless disregard for the welfare of the public, and can only be ascribed to a deliberate intention to deceive and defraud. This is clear from the evidence in the case.

BRINKLER'S CALLOUS INDIFFERENCE

"There are a number of complaints in this case showing that many persons have been defrauded by the respondent. The callous indifference of the promoter of this business to the actual conditions of those induced to correspond with him is well shown in the complaint of Mrs. Norris Williams of Wilkes Barre, Pennsylvania, who was induced by the advertising matter of Mr. Brinkler to telegraph him as follows:

"Urgent case; acute pulmonary consumption, four weeks, both lungs. 101 fever. Serious hemorrhage month ago. Slight cough. Patient in bed out of doors. Overgrown boy. Seventeen years, six feet. One hundred forty weight. Intellectual type, athletic clerk. Feeling distention after meals. Some constipation from milk and egg diet. Kidneys all right. Can afford \$1.00 a day for food and get anything reasonably cooked. My husband died two months ago consumption so advise most reasonable price for treatment. Wire price collect immediately and I will telegraph money tomorrow. Letter follows."

"Mr. Brinkler's reply was as follows:

"Wire forty dollars for quick relief followed by complete course."

"Thereupon Mrs. Williams wired \$40 for the treatment referred to, and received in reply instructions as to what food should be given to the boy and what food should be withheld from him. Shortly thereafter the boy was taken to a sanatorium and died. Mr. Brinkler was informed of this and of the destitute circumstances in which the mother found herself, and urged to make a refund, which he declined to do.

TESTIMONIALS (OF COURSE) FOR DEFENSE

"Mr. Brinkler in his defense filed a large number of testimonials, in which the writers allege that they had been cured of a number of different diseases by his treatment, and also produced several witnesses who testified to the same effect. From the evidence in the case, however, I am satisfied either that the cure or relief reported was purely imaginary or that the purchaser of the treatment was deceived into ascribing to this system a recovery due in reality to natural causes, or was misled by temporary relief following a change of diet, or, if the sufferer was actually cured in any case it was necessarily the result of chance, the case being one in which the cause was actually a wrong diet and the diet prescribed being by good fortune a proper one for the case.

"Counsel for respondent have submitted a motion that the case be dismissed on a stipulation to the effect that hereafter Mr. Brinkler will confine himself to the sale of diets for various conditions and will not undertake to treat diseases through the mails. The circumstances of this case are such, however, that I believe the interests of the public can best be served by the issuance of a fraud order, and I therefore recommend that this motion be denied.

BRINKLER INDICTED

"Mr. Brinkler was, on August 7, indicted by the Federal Grand Jury, sitting at Washington, for using the mails in furtherance of a scheme to defraud, in the conduct of the business described herein, and is now held in the sum of \$3,500 for trial.

"The postmaster at Washington reports that Mr. Brinkler receives on an average 252 pieces of mail a day.

"I find that this is a scheme for obtaining money through the mails by means of false and fraudulent pretenses, representations and promises, in violation of Sections 3929 and 4041 of the Revised Statutes, as amended, and therefore recommend that a fraud order be issued against G. H. Brinkler, at 1322 Rhode Island Avenue, Washington, D. C."

The fraud order was issued August 19, 1914.

Organic Differentiation.—Unity of internal structure combined with a great diversity of external forms is the great principle of organic differentiation.—Hugo de Vries, *Science*.

Correspondence

Kelling's Hemolytic Test

To the Editor:—It is difficult to criticize your editorials as they usually run, but I am surprised to find in THE JOURNAL, Sept. 5, 1914, p. 870, under the caption, "A New Serum Reaction for the Diagnosis of Gastric Carcinoma," an account of the Kelling hemolytic test.

Surely this cannot be a new test, for I have used it for about six years, and have applied the revised technic, using diluted serum and hen's corpuscles in 158 cases of suspected visceral malignant neoplasms and several hundred normal controls within the past two years. You state that further reports on the use of the serum test will be awaited with interest, yet the older technic was applied and reported by Weil, Blumgarten, Crile, Wittemore and others quite a few years ago. Furthermore, a couple of years ago I gave my opinion of the newer technic (diluted serums and alien corpuscles) in a lengthy article to the *Archives of Diagnosis*, October, 1912, which opinion I have not altered during my experience with the 158 cases since examined and checked by operation or subsequent history. In this article I also reviewed the literature to that date. Inasmuch as this has been published, and there have been no observations, so far as I know, tending to gainsay my conclusions, I see no reason to publish it again and thereby present it as a "further report."

You speak of the technic as simple. When properly set up with standard suspensions of hen's corpuscles, properly diluted serums, controls in plenty, with distilled waters, normal salts, various dilutions of normal serums and under strictly aseptic conditions, experience has shown me that the technic is tedious, to say the least, though, of course, less so than the complement-fixation test.

I am certain that all unfavorable reports from Americans are due to the fact that their technic has not been proper. Invariably, the men above mentioned used the older technic. Nor did they adhere strictly to this, some (especially Crile, Johnston, Canning) even going so far as to use the "reverse hemolysis" or destruction of corpuscles from suspected case with healthy serums. The work by Americans was usually stupid and entirely unfair to Kelling. So far as I know, I am the only man in this country who has applied and reported the new technic suggested by Kelling. So long as my results continue so pleasing as they have during the past two years, I shall use the test routinely in my work. Applied and interpreted as I suggested in the above-mentioned article, the test is quite specific.

There is one observation which I would like to note at this point. The hemolytic test cannot be applied to "mailed serums" and any degree of confidence placed in the results. The serum should be iced as soon as drawn and kept perfectly quiet until the test is set up.

In conclusion, the reaction is an old one. Both technics have been tried out by American laboratory workers and recorded in the literature, and are scarcely "simple" as regards their practical application.

B. G. R. WILLIAMS, M.D., Paris, Ill.

[COMMENT.—The title of Kelling's article is "*Blutserum-untersuchungen bei Karzinomatösen mit neuer verbesserte Methode*" (Study of the Blood-Serum in Carcinoma with New Improved Methods). The improvement consists in diluting the serum with 0.85 per cent. salt solution 1:10 and extending the time in the incubator (37 C.) to twenty-four, occasionally to forty hours. These changes, it would seem, make it quite proper to speak of the test as new. A complete review of all the hemolytic tests applied to carcinoma was not indicated. We still hold that further reports of results with Kelling's new method may be awaited with interest, because of the large number of positive results reported by him. Kelling also lays special stress on combining this test with search for occult blood in the feces. If both are positive, the diagnosis of carcinoma becomes highly probable.—Ed.]

Insurance Companies and Fee Bills

To the Editor:—Since the passage of the employees' liability act physicians of Illinois are being flooded by the insurance companies with fee bills which they are requested to sign. These fee bills offer for many things a much lower price than we are accustomed to receiving. Insurance companies almost without exception do not pay the bills presented them without first asking for a reduction.

I wish to call the attention of the profession to the fact that in signing these fee bills they are simply signing away their right to charge a fair price for their services and in return they get nothing, not even the promise of a single case, for these fee bills are not sent to one physician in the community, but to many. The proper thing to do is not to sign these fee bills but to render bills in accordance with the established fee bill of the community.

G. W. Boor, M.D., Evanston, Ill.

National Standard Requirement for Medical Practice

To the Editor:—Permit me to voice my approval of your recent editorial endorsing a national standard requirement for medical practice. The national medical board is a long felt want, and its establishment cannot come too soon.

ARTHUR I. BLAU, M.D., New York.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted on request.

VACCINES, SEROBACTERINS AND LACTIC-ACID FERMENTS

To the Editor:—When the vaccine peddler visits me I wish not to appear rude to him. I try to give him a patient and respectful hearing. He seems to know all about pathology and gives me wonderfully helpful suggestions. He shows me testimonials from Dr. Tom and Dr. Dick and encouraging reports from Dr. Harry. These communications relate to experience with mixed vaccines in the treatment of "doubtful infections." I notice that most of these doubtful infections are classed as "rheumatism."

I have been reading and investigating some for the last fifteen years, and I do not like to have my line of vision bent through lenses fitted by these enthusiastic philanthropists. After some weeks of special search in the literature from disinterested sources, I find myself in a culdesac of uncertainty in regard to the use of vaccines. I found comfort in a Current Comment in THE JOURNAL, Jan. 25, 1913, under the title "The Reductio ad Absurdum of Vaccine Therapy." There is nothing pessimistic in the article, but rather the bringing down to earth of the man who entertains the wild notion that everybody should be vaccinated for every thing that might in the remote future attack him.

I wish to know in particular concerning the principle of sensitized vaccine as elaborated by Besredka during the last seven years. In an editorial in THE JOURNAL, Nov. 15, 1913, p. 1814, the use of the sensitized living bacteria as a means of combating infection in the human subject was discussed and condemned. Now certain dispensers of biologic products have begun to "put upon the market a piece of goods" for which they claim special merit. I refer to the "serobacterins" which differ from the preparation proposed by Besredka only in the one feature of non-viability of the bacteria contained in the commercial product. I should like to know about these serobacterins. There is a most excellent article on the subject of vaccine therapy by Dr. R. M. Pearce in THE JOURNAL, Dec. 13, 1913, p. 2115.

Another inquiry I wish to make is concerning the merits of the *Bacillus lactis bulgaricus*. I have noticed some rather convincing reports from various sources, notably in THE JOURNAL, July 19, 1913, p. 164, by Dr. Clock of New York. Please inform me if there is merit in the tablet of this bacillus. Tell me if the live culture in tubes is to be preferred in the "implantation method" of treating intestinal infections.

You are aware that the practitioner in the smaller towns is handicapped in that he is almost driven to the use of hand-me-down preparations sometimes, yet I am sure that we get some benefit from these stock vaccines and other biologic preparations if we study our patients and discriminate.

S. H. LANDRUM, M.D., Altus, Okla.

ANSWER.—The editorial cited as condemning the sensitized bacteria whose use is advocated by Besredka bases such condemnation on the supposition that these preparations have not given any results superior to those obtained by the vaccines consisting of dead bacteria which are now on the

market. The objection to sensitized living bacteria is that there is always an uncertainty as to the action of living bacteria in the animal body. No danger from this source can be attributed to the serobacterins because they consist of dead bacteria and, so far as is known, can do no more harm than other dead bacteria. In fact, it is claimed that the serobacterins or sensitized dead bacteria are preferable to other vaccines because the toxic products of the bacteria other than the immunizing property have been largely removed. With regard to these preparations it must be said that they are still on trial. Whether or not they will prove superior to the ordinary vaccines remains to be decided in great part by careful clinical observation.

In the last paragraph, Dr. Landrum has struck the keynote of the proper use of biologic preparations. Stock vaccines can do no harm if they are applied after a discriminating study of the patient. In fact, such a discriminating study will greatly limit their use because it will be seen that the stock vaccine rarely fits the case.

With reference to the *Bacillus lactis bulgaricus*: There is a large amount of literature to the effect that the *Bacillus bulgaricus* hinders putrefaction in the intestinal canal. While there may be some question as to a greater success in securing the implantation of this bacillus by administering it in "live cultures," the report of the Council on Pharmacy and Chemistry (THE JOURNAL, Dec. 6, 1913, p. 2084) shows that such a culture is likely to reach the consumer in a more active state than one in the form of tablets.

TOXIC ACTION OF SODIUM CACODYLATE

To the Editor:—I have heard that subcutaneous injections of arsenic may cause blindness or other injury to the eye. I am using the cacodylate of soda, Clin Laboratories, Paris, and I am anxious to know whether there is anything to fear from continuing the treatment too long. Can you give me any information?

THEODORE DUNHAM, M.D., Northeast Harbor, Maine.

ANSWER.—Sodium cacodylate (CH_3) $2\text{AsO}_3\text{ONa} + \text{H}_2\text{O}$ is an organic preparation of arsenic in the form of a sodium arsenate in which two molecules of the methyl radical, CH_3 , have replaced two molecules of hydroxyl, OH , in the arsenic acid. The arsenic is in a firm, organic combination and in the form of arsenic acid. It appears to have no therapeutic action and to be non-toxic so long as it remains in the form of an arsenate. It is slowly reduced by the organism to a compound containing the arsenic in the form of arsenous acid, and in this form the arsenic is therapeutically active and is slightly toxic. The toxicity of sodium cacodylate, however, is so slight that therapeutic doses do not give rise to toxic symptoms. Dawes administered 0.5 gm. to a rabbit weighing about 2,800 gm. without effect, although an injection of 1 gm. to a similar rabbit was fatal (Dawes, S. L., and Jackson, H. C.: Physiologic Action, Elimination and Therapeutic Application of Sodium Cacodylate Used Hypodermatically, THE JOURNAL, June 22, 1907, p. 2090.) These doses correspond to about 10 and 20 gm. in man. The toxic action of sodium cacodylate is similar to that of inorganic arsenic. There is nothing in the literature to show that sodium cacodylate has a special action on the eye. The production of blindness by other arsenic compounds, e. g., atoxyl, is well known. In administering cacodylate of sodium there seems to be no need to fear the production of blindness. An odor of garlic may sometimes be observed in the breath or in the urine. The long-continued use of the preparation might give rise to slight symptoms similar to those occurring after the administration of inorganic arsenic, such as puffiness of the lids and redness and smarting of the eye. Sodium cacodylate will be found described in New and Nonofficial Remedies, 1914, p. 42.

RENEWING RUBBER GOODS

To the Editor:—Will you kindly publish a formula for renewing the rubber in soft rubber goods such as catheters, stomach tubes, etc. I have a number that are commencing to show signs of cracking and some of hardening.

R. L. B.

ANSWER.—We know no method for renewing rubber goods. Suggestions are published from time to time, however, as to the manner in which the life of rubber goods may be prolonged. It has been said that rubber goods kept covered with dry flour or powdered naphthalin in an air-tight receptacle will keep well. Another method is to keep the goods in con-

tact with the vapors of ammonium carbonate. For rubber tubes it is claimed that two coats of a syrupy solution of para rubber in benzine will materially lengthen their life. The following is from the *Druggist's Circular* (September, 1907, p. 600):

"Under ordinary conditions soft rubber goods will often remain unchanged for years; some lots will rapidly deteriorate. Whether this is due to differences beyond the control of the manufacturer or the result of the use of cheap methods, we are not in a position to say. Both causes may operate to lessen the keeping qualities of the goods. Exposure to unusual heat is said to be bad for rubber; whether air at normal temperature exerts any influence, there is a difference of opinion. One should endeavor to buy the best only; and purchases should not be made very far ahead of demand. Keeping the goods in a moderately cool place is probably about the only thing to be done to protect them."

RECIPE FOR AGAR-AGAR CRACKERS

To the Editor:—Is it possible to secure a recipe for agar-agar crackers? I should be grateful if you could tell me how to make them.

A. C. KIRKSEY, New Rochelle, N. Y.

ANSWER.—To make agar-agar biscuits it is only necessary to add the fine agar-agar to the flour used in making the biscuits. The amount should be, if possible, sufficient so that a dose (5 grams) may be included in each biscuit.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

COLORADO: Denver, October 6. Sec., Dr. David A. Strickler, Empire Bldg., Denver.

DISTRICT OF COLUMBIA: Washington, October 13-15. Sec., Dr. George C. Ober, 125 B St., S. E., Washington.

GEORGIA: Atlanta, October 13-15. Sec., Dr. C. T. Nolan, Marietta.

IDAHO: Wallace, October 6. Sec., Dr. John F. Schmershall, Jerome.

ILLINOIS: Chicago, October 6-8. Sec., Dr. C. St. Clair Drake, Springfield.

KANSAS: Topeka, October 13-15. Sec., Dr. H. A. Dykes, Lebanon.

LOUISIANA: New Orleans, October 29-31. Sec., Dr. E. L. Leckert, New Orleans.

MICHIGAN: Lansing, October 13-15. Sec., Dr. Beverley D. Harison, 504 Washington Arcade, Detroit.

MINNESOTA: Minneapolis, October 6-9. Sec., Dr. Thomas McDavitt, Lowry Bldg., St. Paul.

MISSISSIPPI: Jackson, October 27-28. Sec., Dr. E. H. Galloway, Jackson.

MONTANA: Helena, October 6. Sec., Dr. William C. Riddell, Helena.

NEVADA: Carson City, November 2. Sec., Dr. S. L. Lee, Carson City.

NEW JERSEY: Trenton, October 20-21. Sec., Dr. H. G. Norton, Trenton.

NEW MEXICO: Santa Fe, October 12. Sec., Dr. W. E. Kaser, East Las Vegas.

OKLAHOMA: Muskogee, October 6-8. Sec., Dr. John W. Duke, Guthrie.

SOUTH CAROLINA: Columbia, November 9. Sec., Dr. A. Earle Boozer, 1806 Hampton St., Columbia.

WEST VIRGINIA: Clarksburg, October 13. Sec., Dr. S. L. Jepson, 81 Twelfth St., Wheeling.

Higher Entrance Standards in Manitoba

The new announcement from the Manitoba Medical College, Winnipeg, says that beginning in 1915, senior matriculation (the equivalent of the twelfth grade course in one of the best four-year high schools) will be required for admission to the five-year medical course. The first year of the latter is devoted chiefly to the sciences, physics, chemistry and biology. The requirement in all the Canadian medical schools, heretofore, has not exceeded junior matriculation or completion of the third year (eleventh grade) of high school work.

Higher Preliminary Requirements

According to the requirements of the medical practice act of Washington, graduates of 1918 and thereafter who desire to practice medicine in that state must show evidence of having completed at least one year of collegiate work in addition to graduation from an accredited four-year high school or an equivalent education. This requirement applies to all students matriculating this fall—for the session of 1914-1915

and thereafter. There are now twenty-one states which have adopted the requirement of one or two years of collegiate work as the minimum requirement of preliminary education.

College Requires Intern Year

The announcement just received from the University of California Medical School states that all students matriculating this fall—for the session of 1914-1915 and thereafter—will be required to serve a fifth year as an intern in an approved hospital or in other special work. This is the fifth medical college in this country to adopt this requirement, the others being the University of Minnesota Medical School, Rush Medical College, Leland Stanford Jr. University School of Medicine, and the University of Vermont College of Medicine.

Illinois May Report

Dr. C. St. Clair Drake, secretary of the Illinois State Board of Health, reports the written examination held at Chicago, May 12-14, 1914. The number of subjects examined in was 16; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 177, of whom 140 passed and 37 failed. The following colleges were represented:

College	PASSED	Year Grad.	Total No. Examined
Bennett Medical College.....	(1912) (1913) (1914,31)		33
Chicago Coll. of Med. and Surg. (1912,2) (1913,3) (1914,20)			25
Hahnemann Med. College and Hosp., Chicago (1910) (1913)			2
Jenner Medical College	(1913) (1914)		1
Northwestern University	(1913,2) (1914,16)		18
Rush Medical College	(1902) (1914,34)		35
University of Illinois	(1913) (1914,18)		19
University of Louisville	(1907)		1
University of Michigan, Homeo. Med. College.....	(1883)		1
Kansas City Medical College.....	(1888)		1
John A. Creighton Medical College.....	(1913)		1
University of Tennessee	(1899)		1
Marquette University	(1913)		1
National University, Athens	(1908)		1

FAILED

Bennett Medical College	(1912) (1913) (1914,2)	4
Chicago College of Med. and Surg. (1910) (1911,2) (1913)	(1914,6)	10
College of Med. and Surg. (Physio-Medical).....	(1910)	1
Hahnemann Med. College and Hosp., Chicago.....	(1912)	1
Hering Medical College	(1913)	1
Jenner Medical College	(1912) (1912,2)	3
National Medical University, Chicago	(1903) (1909)	2
Northwestern University	(1913)	3
Rush Medical College	(1914)	1
University of Illinois	(1912)	1
Hospital College of Medicine, Louisville.....	(1904)	1
Detroit College of Medicine	(1910)	1
American Medical College	(1912) (1913)	2
Barnes Medical College	(1910)	1
St. Louis College of Physicians and Surgeons.....	(1907)	1
Meharry Medical College	(1907) (1914)	2
Royal University, Palermo, Italy.....	(1911)	1
University of Zurich, Switzerland.....	(1911)	1

Arizona July Report

Dr. John Wix Thomas, secretary of the Board of Medical Examiners of Arizona, reports the written examination held at Phoenix, July 7-8, 1914. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 18, of whom 12 passed, including 3 osteopaths, and 6 failed, including 3 osteopaths. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
University of Colorado	(1913)		82.8
Northwestern University	(1904)		82.1
Rush Medical College	(1906) 78.8; (1913)		81
University of Maryland	(1914)		81
Barnes Medical College	(1902)		77.3
Washington University	(1912)		84.7
John A. Creighton Medical College.....	(1905)		75
University of Pennsylvania	(1898)		81.6
FAILED			
California Eclectic Medical College.....	(1912)		50.6
Baltimore Medical College.....	(1913)		67
Jefferson Medical College.....	(1885)		63.8

Book Notices

THE EARLY DIAGNOSIS OF TUBERCLE. By Clive Riviere, M.D., F.R.C.P., Physician to Outpatients, City of London Hospital. Cloth. Price, \$2. Pp. 260, with 30 illustrations. New York: Oxford University Press, 1914.

This is a highly instructive addition to the literature of tuberculosis. It deals with the recognition of incipient symptoms, chest signs and complications, and considers in minute detail the recognition of the earliest ravages of the disease. The summary after each discussion is helpful in fixing the points in the memory. Exhaustive chapters on special diagnostic tests (especially roentgenography) are great helps. The uses of tuberculin for diagnostic and therapeutic purposes are definitely stated and should be an aid to the general practitioner in confirming other signs and symptoms. Part 2 concerns itself with tuberculosis in children and with infection of the thoracic glands and hilum. The same procedure for proper diagnosis is pursued as in the first part of the book, and some statistics are added as to the occurrence of this lesion, which is perhaps the earliest stage of lung tubercle in childhood. The temperature as a guide to the existence of tubercle is shown to be at fault many times, as averages show a range of temperature in normal children by mouth from 97.4 to 100.5, depending on time of day and age. The conclusion is deduced that a few points must be allowed in childhood both above and below the normal limits for adults; but in all cases we should examine carefully into the cause of temperature fluctuation, such as rest or exercise, atmospheric temperature, rectal or oral, etc. Distinct fever is a valuable indication, but its absence does not exclude tuberculosis. The cutaneous test of von Pirquet is of value in the first two or three years of childhood. The percutaneous test of Moro and Dogono is of less value. The intracutaneous test (Mendel) made into the substance of the skin has the disadvantage of technical difficulty, and the reaction is painful. The subcutaneous test (Escherich) has the advantage that reaction can be obtained in active cases in which the cutaneous test is liable to prove negative. There are many other good features elaborately discussed which space forbids mentioning. All in all, the work is a valuable reference book.

THE SOURCE, CHEMISTRY AND USE OF FOOD PRODUCTS. By E. H. S. Bailey, Ph.D., Professor of Chemistry, University of Kansas. Cloth. Price, \$1.60 net. Pp. 517, with 75 illustrations. Philadelphia: P. Blakiston's Son & Co., 1914.

The work of the chemical laboratory of the University of Kansas is generally well known among those interested in the subject. This work by Bailey coming from that laboratory will be found sufficiently complete to serve as a text for students of foods, and will be of aid to every householder in the judgment as to what is suitable and safe. A more general dissemination of the knowledge offered in it would result without doubt in economic betterment and in better nutrition. The plan followed for presenting the various foods and beverages found in the markets of the world is to discuss their source, method of preparation for sale, packing, preserving, shipping, composition, nutritive and dietetic value and use by people of different countries. The book is well illustrated and well prepared.

BLOOD-PRESSURE IN MEDICINE AND SURGERY. A Guide for Students and Practitioners. By Edward H. Goodman, M.D., Associate in Medicine in the University of Pennsylvania. Cloth. Price, \$1.50 net. Pp. 226, with illustrations. Philadelphia: Lea & Febiger, 1914.

We have already a number of small treatises on blood-pressure which aim to describe the instruments and their use as well as the physiologic and pathologic variations of the blood-pressure. The work of Goodman is well written and gives the essential details and describes the principles clearly. It will be found very useful to the general practitioner who is finding the sphygmomanometer as necessary as the thermometer or the stethoscope and must have some guide to its use and to the interpretation of its results.

PSYCHIANALYSIS: ITS THEORIES AND PRACTICAL APPLICATION. By A. A. Brill, Ph.D., M.D., Chief of the Clinic of Psychiatry, Columbia University Medical School. Second Edition. Cloth. Price, \$3 net. Pp. 393. Philadelphia: W. B. Saunders Company, 1913.

This new edition of Brill's well-known book is enlarged by the addition of two chapters, previously published in a medical periodical, and by the insertion of the reports of some new cases and analyzed dreams. It is not the scope of a book review to enter into a critical discussion of the value of this method and who shall apply it, or to take note of the personalities which are being bandied about between adherents and enemies of Freud's school. Thus Brill says: "Our local critics have not changed; they are constantly rehashing what was said abroad, and which was adequately answered long ago. They have not offered a single new idea of their own." It must be confessed that the absolutely unbiased observer will consider this a rather unphilosophic attitude. A year or so ago psychoanalysis and Freud were the engaging topic of neurologic convocations. To-day, while the method and the theories seem to have a place in the study and treatment of nervous disease, they are being considered in a more sane light and in a better atmosphere. It is to be feared that the reader will not glean from Brill's book this present-day atmosphere. So enthusiastic a pupil of Freud as Brill cannot write in the light of a non-combatant. The reader who wishes to obtain a knowledge of the extreme limit of the Freudian school at this time can gain it from Brill's book.

A SHORT PRACTICE OF MIDWIFERY FOR NURSES, EMBODYING THE TREATMENT ADOPTED IN THE ROTUNDA HOSPITAL, DUBLIN. By Henry Jellett, B.A., M.D., F.R.C.P.I., Master, Rotunda Hospital. Fourth Edition. Cloth. Price, \$2.50. Pp. 508, with 169 illustrations. New York: Paul B. Hoeber, 1914.

In the preface the author explains that in a book for nurses much must be written "which is beyond what their everyday practice would at first sight show to be necessary. Causes must be explained and methods of treatment must be given which it is not for a nurse to carry out, but which it is necessary for her to understand." He believes that if the nurse's knowledge is limited to the bare essentials which will enable her to deliver a case of normal labor she will be unable either to give her patient the required treatment before the physician reaches the case, or to give intelligent aid to the obstetrician when he does arrive. In spite of this prolog, practically the only thing which might have been omitted from the book is the chapter on hydatidiform mole; though this subject is of undoubted interest to the nurse, she is not likely to be called on to make a diagnosis or to treat such a condition.

TROPICAL MEDICINE AND HYGIENE. By C. W. Daniels, M.B., F.R.C.P., Lecturer on Tropical Diseases, London School of Tropical Medicine. With a Chapter on Snakes by A. Alcock, C.I.E., M.B., F.R.S. Second Edition. Part II. Cloth. Price, \$3 net. Pp. 278, with 107 illustrations. New York: William Wood & Co., 1914.

The second part of this manual deals with diseases due to the metazoa, which include the parasitic worms; in addition, infestation with insects and the action of insects as carriers of disease are described. The book ends with a chapter on snakes and snake venoms. The treatment appears to be as thorough as in Part I, and a considerable number of infections dealt with are common to temperate climes, such as tapeworms, ankylostoma and trichinae.

THE MENTAL HEALTH OF THE SCHOOL CHILD. The Psycho-Educational Clinic in Relation to Child Welfare. Contributions to a New Science of Orthopneics and Orthosomatics. By J. E. Wallace Wallin, Ph.D., Professor of Clinical Psychology, School of Education, University of Pittsburgh. Cloth. Price, \$2. Pp. 461. New Haven: Yale University Press, 1914.

This is a collection of reprinted papers and addresses published and delivered by the author in recent years. As suggested in the preface, they form a unitary but not a systematic whole. The book is not a text for the beginner in the psychology of the growing child. For those who have made a start in the subject, the author's views on various large aspects of the question will be valuable.

Miscellany

Fire-Damp or Methane Indicator

An apparatus which may prove of great value in coal-mines has recently been invented by a resident of London and is known as the Williams fire-damp indicator or methanometer. The invention is a detector of the dangerous hydrocarbon fire-damp, a gas responsible for many serious explosions in coal-mines. The apparatus is made in two parts: one, an instrument which is very sensitive and responds quickly when fire-damp is present; the other, a dial indicator which shows the exact percentage of methane in the atmosphere. The detector and indicator may be placed side by side, enabling the miners themselves to know by what percentage of fire-damp they are surrounded, or the indicator may be placed at any convenient center. The connection between detector and indicator is electric. By either one of these methods a series of instruments posted in various parts of the workings forms a safeguard hitherto unknown.

It is thought that the introduction of fire-damp indicators will also advance the use of electric hand lamps for lighting purposes in mines. At present the old safety or oil lamp is used because its flame gives evidence of the presence of methane, but many accidents are attributed to the feebleness of its light. The inventor hopes to perfect a smaller instrument which can be easily carried by each miner. (A report by a scientific man with regard to the Williams fire-damp indicator and a descriptive pamphlet may be had from the Bureau of Foreign and Domestic Commerce, Washington.)

Sugar Solution and Coagulation

Last year by a curious coincidence THE JOURNAL published, on the same page, reviews of two articles, one commending sugar solution for its efficacy in promoting coagulation and the other commending it for its property of inhibiting coagulation (June 7, 1913, pp. 1840-1841). E. Schreiber called attention to his success with intravenous injection of a 5 to 20 per cent. solution of sugar to arrest internal hemorrhage, while F. Kuhn commended sugar solution proctoclysis in prophylaxis of thrombosis. J. Löwy has been following Schreiber's directions in twelve cases of internal hemorrhage, as he reports in the *Prag. med. Wchnschr.*, Aug. 13, 1914, and states that a good effect was realized in two of the four cases of intestinal hemorrhage from unknown cause or from anemia. The tendency to hemorrhage seemed to be arrested in twenty-four hours after infusion of 200 c.c. of a 20 per cent. solution of grape sugar, and within a week, in the anemia case, the reds rose from 940,000 to 2,340,000. No effect was apparent in the case of hemorrhagic nephritis, and only two of the seven patients with hemoptysis showed any benefit, and this not more than might have been realized from the repose alone, without the sugar. Löwy regards his results as discouraging the use of the method, as greater benefit can be counted on with other, less complicated measures, except possibly for intestinal hemorrhage.

Medical Education and the Public

"Thirty [should be ten] years ago, any ambitious youngster who had the price could find some 'college' ready to fit him out with the magic letters, 'M.D.'—ofttimes after a 'course of study' so petty that a plumber's apprenticeship was a liberal education by comparison. To-day, most of these diploma mills have been closed—though a few continue to do business at the old stand and to send forth wretchedly unprepared men to undertake that most responsible task in the world, the care of the sick. The country needs, not more doctors, but better ones. It is getting them. The medical course of study in a first-class medical college of to-day is calculated to try the earnestness as well as the ability of a would-be physician."—*Chicago Daily Journal*.

Medicolegal

Physician Held Entitled to Injunction Against Former Partner

(*Marvel vs. Jonah* (N. J.), 90 Atl. R. 1004)

The Court of Errors and Appeals of New Jersey reverses a decree of the court of chancery so far as it refused the complainant an injunction. The court says that the vice chancellor before whom the case was heard in the court below held that the complainant was entitled to an accounting, and to have the partnership dissolved because of breaches of the partnership agreement by the defendant, but refused to enforce against the latter his covenant to refrain from practicing his profession in the city for a period of three years, in case the partnership was terminated because of violations of the contract by him. The conclusion of the vice chancellor that it would be unjust and unnecessarily oppressive to enforce the restrictive covenant against the defendant seemed to be based on the idea that, although the independent practice of his profession in that city by the defendant would result in a loss of patients by the complainant, yet, even after such loss, the latter's practice would still be so large as to be beyond his ability to cope with it without the assistance of others, and, consequently, that the restraint sought by him against the defendant would be of little value to him if granted. The premises, however, did not justify such a conclusion. If the complainant had built up a practice so large that he was unable to take care of it without the aid of qualified assistants, he was entitled to the emoluments thereof, and to be protected against the loss of those emoluments through illegal competition. It will hardly do to say that a man who has built up a business so extensive that he cannot handle it without the aid of a staff of assistants suffers no loss or injury by its diminution in volume to such an extent that he no longer needs assistance to carry it on, provided that what remains of it is sufficient to fully occupy his own time. Common experience is to the contrary. The right of the complainant to the aid of a court of equity to restrain the defendant from violating his covenant to refrain from practicing his profession in the city for three years after the termination of their partnership agreement did not depend on the extent of the injury to his business which would result from such violation. It was sufficient that such injury was material. Moreover, the damages arising from the breach of such a covenant as that now under consideration, would be continuing, accruing from day to day, and it would be impossible to ascertain the money loss sustained by the complainant therefrom with anything approaching accuracy, and an action for damages would afford no adequate remedy. Nor could it be really said that to grant an injunction would be unjust to the defendant because it would deprive him of practicing in the only field of his acquaintance. The fact that the performance of such a promise involves personal hardship, or pecuniary loss, to the promisor, affords no justification for non-performance.

What Is Required of Physicians and Surgeons—Malpractice Liability and Evidence

(*Longfellow et al. vs. Vernon* (Ind.), 105 N. E. R. 178)

The Appellate Court of Indiana, Division No. 1, affirms a judgment for \$2,500 damages in favor of the plaintiff, Vernon, against Dr. Longfellow and another, partners, who had attended the plaintiff when she, at about the age of 5 years, had slipped and injured her right leg and ankle. It was charged that the defendants had negligently failed to discover a split in the bone of the leg near the ankle-joint, used ordinary gasoline to remove an adhesive bandage or plaster, placed on the badly swollen limb a bandage or plaster-of-Paris cast so tight as to greatly impede the circulation, from which blood-poisoning resulted which extended to all parts of the body, necessitating a removal of part of the bone between the knee and the foot and the scraping of the bone of the right shoulder, etc. The court holds that the

evidence was sufficient to warrant the jury in returning a verdict against the defendants.

The court says that if the want of that reasonable degree of skill and learning ordinarily possessed by physicians and surgeons practicing in similar localities at the same time, or the negligence of the physician or surgeon in diagnosing the case or treating his patient, is the proximate cause of injury to the patient, the physician or surgeon is liable to answer in damages therefor. In other words, the implied obligation of the physician or surgeon to his patient is that no injurious consequences shall result to him from want of proper learning, skill, care and diligence. Failure to exercise the reasonable care and diligence required by the law may be predicated on things done that should not have been done, or on the negligent failure to do or cause to be done something that should have been done, in the particular instance.

The question of negligence, or failure to exercise ordinary skill and care in the treatment of any particular case does not depend on the professional skill and learning of the physician, but is to be determined from a consideration of his acts, conduct, omissions and treatment in the particular instance. If he possessed the highest degree of skill and learning in his profession, and failed to exercise the care and diligence required by the law in treating his patient, his skill and learning could not shield him from the consequences of such negligent treatment. On the other hand, if he did not possess the skill and learning required by the legal standard, but this treatment in the particular instance was proper, he could not be held liable for the want of such skill which resulted in no injury to the patient.

Whether the treatment of any particular injury or case was proper, or whether a surgical operation was skillfully performed, or whether a particular disease resulted from alleged negligent treatment, and like questions of science, must of necessity depend on the testimony of physicians and surgeons learned in such matters. In such a case as this, however, in which the issues presented the question of the defendants' want of professional skill and learning, and likewise that of negligence in failing to exercise ordinary or reasonable care and diligence in diagnosing and treating the plaintiff's injury or disease, all the facts and circumstances of the treatment, the condition and conduct of the patient, the acts and conduct of the physicians, their omissions, if any, and any other fact that may throw light on the questions at issue are proper matters of evidence to be given by any competent witness, either to support or to negative the charge of malpractice.

Courts without Power to Order Physical Examinations

(Yazoo & Mississippi Valley Railroad Co. vs. Robinson (Miss.), 65 So. R. 241)

The Supreme Court of Mississippi holds that, until the legislature chooses to authorize it by statute, the courts of that state have no power to compel plaintiffs in personal-injury cases to submit to physical examinations by reputable and disinterested physicians appointed by the courts. The court says that this important question has not heretofore been considered by it, and that it prefers, rather than determine whether the court below erred in the instant case in overruling the railroad company's motion, to have the plaintiff submit to such an examination to be made at the expense of the company, to settle question of the power of the circuit courts of Mississippi to make the order the company requested by its motion. An examination of the decisions of the state courts on this point discloses irreconcilable conflict. The Supreme Court of the United States said, in *Union Pacific Railway Co. vs. Botsford*, 141 U. S. 250: "The order moved for, subjecting the plaintiff's person to examination by a surgeon, without her consent and in advance of the trial, was not according to the common law, to common usage, or to the statutes of the United States." This expression applies with equal force to the practice, the common usage and statutes of Mississippi. Whatever may be the rules and practice of other states, the common law controls here until the legislature chooses to act on the question.

Society Proceedings

COMING MEETINGS

Amer. Academy of Ophthal. and Oto-Laryn., Boston, Oct. 19-21.
Amer. Assn. for Study and Prevention of Inf. Mortal., Boston, Nov. 12.
American Association of Railway Surgeons, Chicago, Oct. 14-16.
Delaware State Medical Society, Wilmington, Oct. 13-14.
Idaho State Medical Association, Boise, Oct. 8-9.
Mississippi Valley Med. Assn., Cincinnati, Oct. 27-29.
Nevada State Medical Association, Reno, Oct. 13-15.
New Mexico Medical Society, Albuquerque, Oct. 5-7.
Southern Medical Association, Richmond, Nov. 9-11.
Vermont State Medical Society, Rutland, Oct. 8-9.
Virginia Medical Society, Washington, D. C., Oct. 27-30.
Wisconsin State Medical Society, Oshkosh, Oct. 7-9.

AMERICAN ROENTGEN RAY SOCIETY

Fifteenth Annual Meeting, held in Cleveland, O., Sept. 9-12, 1914

The President, Dr. Sidney Lange, Cincinnati, in the Chair

Officers Elected

The following officers were elected for the ensuing year: president, Dr. Alfred L. Gray, Richmond, Va.; vice-presidents, Drs. W. H. Stewart, New York City, and D. R. Bowen, Philadelphia; secretary, Dr. Willis F. Manges, Philadelphia; treasurer, Dr. Leonard Rey, Buffalo, N. Y.; member of executive committee, Dr. H. W. Van Allen, Springfield, Mass.

The Interpretation of Pericolic Membranes

DR. E. H. SKINNER, Kansas City, Mo.: The disposition to take roentgenograms of the abdominal viscera at their face value is extremely dangerous, as there is probably nothing which lends itself so easily to misinterpretations of thought. The increasing use of fluoroscopic palpation in both the horizontal and vertical positions will help to eliminate many faulty impressions of single roentgenograms.

DISCUSSION

DR. GEORGE E. PFAHLER, Philadelphia: If the surgeon and roentgenologist would work together more, we would make better progress. I gathered from Dr. Skinner's paper that he considers as diagnostic signs the defects in filling and dilatation of the cecum as the result of constriction above. The condition of reverse peristalsis is an important one to observe.

DR. A. W. CRANE, Kalamazoo, Mich: Roentgenologists have a great responsibility in advising surgeons concerning operations on the intestinal tract which they interpret as stasis. If we pay attention to the clinical laboratory and the physiology of the gastro-intestinal tract, we can be of great assistance. Whenever we have a kinking of the intestinal tract it gives rise to auto-intoxication, and to the absorption of putrefactive products. That gives a reaction in the urine which is definite, namely, the indican reaction. Whenever indican is found in the urine, there is a deficient secretion of hydrochloric acid in the stomach. Food material is not digested in the stomach. The hydrochloric acid is secreted, not for the purpose of digestion, but for the purpose of sterilization, primarily. Even water taken into the stomach is not absorbed, nor are the proteins in the stomach absorbed by it, but by the intestinal canal. The present physiologic view of the stomach is that it is a sterilizing chamber, and that the hydrochloric acid is the material which accomplishes the sterilization. When the condition of intestinal stasis exists, indican appears in the urine and the patient presents symptoms of auto-intoxication. That is not a surgical case unless there is a definite obstruction which causes dilatation. If hydrochloric acid be administered, it will often cause a disappearance of the symptoms. Therefore, many of these patients who do not receive such treatment, but who are subjected to a short-circuiting operation, are not relieved permanently of auto-intoxication. It is here that the roentgenologist can be of much service, especially if he calls the clinical laboratory to his assistance. He is not warranted in advising surgical operation when he discovers evidence of

kinking in the bowel. It is merely a question of how much harm is the kinking doing.

DR. A. M. COLE, Indianapolis: I have examined quite a number of patients who had a short-circuiting operation and, much to my surprise, as well as that of the surgeon, I found that there was still some stasis present. I think we are apt to see too much in roentgenograms of the intestinal tract. Adhesions, kinks and ptosis undoubtedly are present, and a few require surgical intervention, but there is no doubt that some of these patients are perfectly well. Function is the important question to be considered. Is the stasis due to organic disturbance, or to the fact that the patient is anemic, atonic and tired? It has been my experience that under proper hygienic régime many of these patients have become perfectly well in from three to six months. All the intestinal symptoms disappeared. No matter how many kinks and bands may be present, if function is not interfered with, there is no necessity for surgical intervention. We assume a great responsibility when we advise operation because we find evidence of anatomic abnormalities in the intestinal tract.

DR. GEORGE C. JOHNSTON, Pittsburgh: One may demonstrate kinks in almost every case, but that does not mean anything if the kinks open up and the bowel empties itself. The mere existence of ptosis, adhesions, kinks and membranes means nothing unless these structures interfere with the functional activity of the intestinal tract. When they do, the case should be referred to the surgeon, but not otherwise.

DR. JAMES T. CASE, Battle Creek, Mich: The key-note of this whole problem is function. The question does not hinge on the presence of kinks, bands and adhesions, but on function. The examination should not be confined to the colon or ileum, but the entire gastro-intestinal tract should be examined roentgenographically. Nevertheless, we must lay sufficient emphasis on intestinal stasis. Personally, I do not believe that short-circuiting is a solution of the question. That kinks can be shown roentgenographically is an accepted fact, but function is the condition that must be studied. Everyone has seen many cases of Lane's kinks which did not obstruct; these are not surgical cases. I think ileocecal-valve insufficiency is responsible for many cases.

The Protection Necessary When Using the Harder Rays

DR. H. W. VAN ALLEN, Springfield, Mass.: These conditions should be fulfilled in each case: (a) The target should point away from the operator. (b) The tube should be more than 6 feet from the operator. (c) Lead, $\frac{1}{16}$ of an inch in thickness, should be on three sides of the switch booth, and $\frac{1}{8}$ inch thick on the side directly between the tube and the operator. Between this lead and the operator must be some material capable of absorbing the secondary rays caused by the gamma rays striking against the lead. A good arrangement is to place the lead outside of the wood material of the booth. (d) The booth should be ventilated as the depressive effect of ionized air is harmful. These are equally effective with all kinds of tubes, regardless of their type. It is with the deep therapy that new protective precautions are needed.

The new method of cross-fire treatment increases the time per patient materially, and as we will have in the near future tubes which give almost pure gamma rays in large quantities, with little limit to the length of time such tubes can be kept active, it is evident our danger as operators will be greatly augmented. Of all of the above elements of safety, distance is of the greatest importance.

The first essential of tube protection is that it should be a non-conductor of electricity. It should be as resisting to the Roentgen ray as possible. It should be as light weight as possible. For neither of the two latter requirements is glass ideal, several substances being more practical. Many refinements of technic can be added to such a tube-covering, as devices to cool the tube with forced air current. It should carry some means for holding the filters, as these are better so placed than on the patient. This will avoid burns from a secondary ray. These tube-coverings should be as small as possible to facilitate their use in depressions, as the neck, groin and perineum.

Roentgen Diagnosis of Lesions of Vermiform Appendix

DR. H. M. IMBODEN, New York City: Retention of cecal contents after the cecum is apparently empty should be regarded as suggestive of chronic appendicitis. A tender area definitely located in the course of the appendix must be regarded as very suspicious. The Trendelenburg position affords opportunity to study this area unapproached by any other. Stereoroentgenography affords the increased amount of information usual to this method in general.

DISCUSSION

DR. A. HOWARD PIRIE, Montreal: I watched a barium-filled appendix for three weeks and then had the opportunity, forty-three days later, to examine the appendix, which had been removed. It was still filled with the barium. The patient in that case was suffering from gastric symptoms. The appendix was not referred to in any way. After I examined the patient roentgenographically I said that she ought to have an attack of appendicitis because the appendix contained barium. Three weeks afterward she had the attack, with abscess formation. I do not know whether there is any coincidence in the fact of the barium having been given and the attack of appendicitis. I hope not.

DR. PAUL EISEN, Chicago: In every case of appendicitis examination of the stomach is of the utmost importance. Many patients are sent to us with a diagnosis of ulcer of the stomach, and on examination we find pathology in the appendix. These cases have a large six-hour residue in the stomach.

DR. GEORGE E. PFAHLER, Philadelphia: If this bismuth stays in the appendix for such a length of time, why was the appendix not filled with fecal material or food residue before the bismuth got into it? Why did not that stay and crowd the bismuth out?

DR. D. R. BOWEN, Philadelphia: I had one case in which a pin was found in the appendix. It had been lodged there for forty-two days, to my certain knowledge, and if I can accept the statement of the patient it was there for several months, and during all that time there were no symptoms referable to the appendix. The patient was examined because she was known to have swallowed some pins at one time, and also because she had some pain in the left iliac fossa. When the appendix was removed it was found acutely inflamed, enlarged and deformed. I cannot help but feel that in Dr. Pirie's case the barium had something to do with the attack of appendicitis.

DR. E. H. SKINNER, Kansas City, Mo.: In one of my cases there was an appendix shadow for six days after the bismuth meal. This case showed a duodenal ulceration, and a gastro-enterostomy was done, the appendix being removed at the same time. On examination it appeared to be perfectly normal. One can frequently see the appendix forty-eight hours after a bismuth meal, but not before, so that probably the appendix fills as a result of antiperistalsis of the bowel.

DR. B. C. DARLING, New York City: Whether the appendix fills in a certain time or does not, depends on whether it was empty before the bismuth got into that region. Any observation in this connection, to be of value, must be based on an examination of many hundreds of cases. I do not see how the mere fact of retention in the appendix can be taken to mean anything in particular.

DR. L. T. LE WALD, New York City: I think that the retention of bismuth in the appendix is an indication of a sluggish function of the appendix. We examined three cases of diverticulitis which came to operation. They showed a retention of bismuth in the pockets, the bismuth remaining there for over a week.

DR. A. HOWARD PIRIE, Montreal: When the patient is in an upright position, with the appendix hanging down into the pelvis, the fluid contents of the ileum are churned up when they reach the cecum, and when this material begins to settle, the heavy part goes down, and if the appendix hangs down straight this material will settle in the appendix. The same may be true when the patient is lying down, if the appendix hangs down over the pelvic brim. That was the

case in my patient and probably was the reason why the barium salt was retained in the appendix for so long a time.

DR. JAMES T. CASE, Battle Creek, Mich.: These cases can be examined fluoroscopically. I have seen the appendix in 600 cases, and then I stopped counting. The essential point is not whether the appendix is filled or not, but the fact is that the appendix does not participate, very actively, at least, in the peristaltic movements of the cecum. There is an antiperistalsis which I have demonstrated by means of roentgenograms, which showed the transfer of the material from the descending colon and the hepatic flexure by a so-called mass movement, clear across the transverse colon. Antiperistalsis is a very important factor in normal digestion. If antiperistalsis occurs, this material in the colon will get into the appendix and even back into the ileum.

DR. W. H. STEWART, New York City: If there is a retention of material in the appendix for many days, it certainly means a loss of function on the part of that organ, probably the result of some irritation. I believe that in every one of these cases there is some pathology in the appendix.

DR. A. W. CRANE, Kalamazoo, Mich.: Except in catarrhal appendicitis the lumen of the appendix is closed, and as soon as the lumen is closed there is progressive sepsis in the appendix. Appendicitis means bacterial activity. When the appendicitis begins as a catarrhal process the bismuth never enters the appendix. If bismuth can be demonstrated in the appendix, I believe it means that that is not an inflamed appendix. Such an appendix certainly is not the seat of a stricture. When we cannot show the appendix in the roentgenogram, and we can demonstrate a pain point in the region of the appendix, it suggests appendicitis. Here, as in other portions of the gastro-intestinal tract, we ought to be very careful about our advice.

(To be continued)

COLORADO STATE MEDICAL SOCIETY

Forty-Fourth Annual Meeting, held at Boulder, Sept. 9-11, 1914

(Concluded from page 1134)

Some of the Professional Responsibilities of the Physicians of Colorado

DR. O. M. GILBERT, Boulder: Almost every physician in Colorado should be an expert in the diagnosis and management of tuberculosis. The frequency with which a case is permitted to pass unrecognized through the really incipient stage, in which a cure is almost certain, is appalling. Few influences have been more potent during the past two decades in bringing the practice of medicine up to its present high standard than the medical society. There the best that is in us is stimulated, while our petty differences, which are so unworthy of our high calling, soon sink into oblivion.

There has been entirely too much special and indiscriminate legislation on medical matters. At the last session of the California legislature, for instance, thirty-nine bills were introduced which had to do in part or in whole with medical or health affairs. Much would be gained by the repealing of about two-thirds of the laws of this nature that are now on the statute books, and follow by creating a health commission, or department of public health, with its duties and powers well but broadly defined, which could deal efficiently with many of the affairs which are now dealt with so inefficiently by the special acts.

Acute Intestinal Obstruction

DR. C. E. TENNANT, Denver: Three factors are extremely important to the successful care of bowel obstruction. The first of these is the early recognition of the lesion; the second, the immediate exploratory effort, and the third, the good judgment and originality of the operator, who devises methods whereby bowel section may be avoided, even though the early circulatory and necrotic changes may have already commenced in the bowel wall.

In briefly summing up the means at hand for reducing the present high mortality attending acute bowel obstruction the

following four important rules should be observed: first, the early recognition of the lesion even at the expense of exploratory laparotomy; second, the total abstinence from all purgative laxatives and ingestion of fluids which may hasten the rotation of the intestine and its attendant circulatory embarrassment; third, the frequent stomach lavage prior to and often after the operation; fourth, to bear in mind that unless absolutely indicated, the penalty for bowel resection at this time is a greatly increased hazard for the patient.

Use of Amniotic Membrane in the Prevention of Peritoneal Adhesions

DR. C. B. LYMAN, Denver: I have operated in twenty cases in which the membrane has been employed; most of these were cases in which adhesions had developed after abdominal operations and the symptoms were very distressing. All the patients have been completely relieved of the symptoms which had been in existence prior to the operation. Clinically, the results have been perfect in all cases.

Modern Views on Biliary Calculus

DR. J. L. MORTIMER, Denver: The absolute indications for operation are: 1. The acute infectious cholecystitis, not responding to a few days medical treatment. To this may be added peritonitis due to perforation of the gall-bladder or ducts. 2. Empyema and all suppurative processes of the gall-bladder region or liver. 3. Chronic choledochus obstruction, when medical treatment is without effect, and when intermittent hepatic fever sets in. 4. Chronic relapsing cholecystitis, when medical therapy fails. 5. Adhesions when therapy fails. 6. Hydrops vesicae follae, with persistent and severe irritative phenomena. 7. Acute intestinal obstruction in patients with a history of gall-stones. 8. When carcinoma is suspected.

Tendon Transplantation Following Infantile Paralysis

DR. C. G. McEACHERN, Denver: It is my opinion that every case of infantile paralysis can be benefited by surgical procedure.

Treatment of Weak and Flat Feet

DR. GEORGE B. PACKARD, Denver: We must aim to make passive motion possible without pain, spasm or deformity, and to strengthen the muscles, thus restoring function and overcoming deformity and obstruction. The indiscriminate use of foot plates may in some cases do a great deal of harm by weakening the muscular support of the foot. In mild cases or when the feet seem normal at rest, but abducted on weight bearing, the shoes may be modified in such a way as to correct the abnormal position. The next stage is when muscular spasm develops with increase of pain and abduction of the foot. It will be necessary now to put the foot at rest, and this can generally be done in the milder spasmodic cases by adhesive plaster strapping, the foot first gradually but rather forcibly being put into the corrected position. Arch supports may be used later in these cases but should not be used until spasm and resulting pain are relieved. In the more severe cases of this variety an anesthetic must be given, and plaster of Paris applied after the foot has been overcorrected. It is very important also to maintain dorsal flexion as well as adduction. If adhesion or bony changes have taken place, the same effort should be made to correct the deformity if possible by manipulation.

Medical Ethics.—Good ethics, then, is to be found among surgeons who, following the teaching of Hippocrates and Aristotle of Celsus and Galen maintain that he is the upright scientist who pursues his art by the light of sound reason; who draws his conclusions and guides his practice by deductions founded on accurate observation, who observes that clear inductive method which is older than history; who abhors exaggeration and pretence; who practices square dealing; who conducts himself toward his fellows and toward the public as a generous and honorable man.—James G. Mumford, *Clifton Med. Bull.*

Current Medical Literature**AMERICAN**

Titles marked with an asterisk (*) are abstracted below.

Albany (N. Y.) Medical Annals

September, XXXV, No. 9, pp. 479-526

- 1 *Case of Adult Type of Poliomyelitis. H. C. Gordinier, Troy.
- 2 Modern Psychiatry as Related to Therapeutics. J. V. May, Albany.

1. **Case of Adult Type of Poliomyelitis.**—Gordinier reports two cases. The first was a case of rapidly ascending motor paralysis of the type of Landry, which began suddenly in the muscles of the lower extremities, extended rapidly upward, involving in turn those of the trunk, upper extremities and diaphragm, and without subjective or objective sensory disturbances, resulted in death from respiratory paralysis eight days from the onset. The second case was one of acute poliomyelitis in a young adult involving the muscles of both upper extremities and those of the left lower extremity. Death at the end of five days of respiratory paralysis.

Gordinier lays especial emphasis on the absence in his cases, together with many of the recorded cases, of the Landry complex in the literature, of mononuclear round-cell infiltration of the pia, and of the vascular walls, which is so characteristic pathologically of poliomyelitis. He believes from the study of his case and from a careful survey of the literature of Landry's disease, and that of poliomyelitis and multiple neuritis, that we still have a group of cases, identical or at slight variance with Landry's original description. These cases cannot be relegated either on clinical or pathologic evidence, to the adult type of poliomyelitis, or multiple neuritis. In view of the facts here presented, Gordinier believes that the term "Landry's Paralysis" cannot be dropped.

American Journal of Obstetrics and Diseases of Women and Children, York, Pa.

September, LXX, No. 3, pp. 329-544

- 3 *Experimental Ligation of One Ureter with Application of Results to Clinical Gynecology. W. C. Jones, Chicago.
- 4 Pseudostruma of Ovary. L. W. Strong, New York.
- 5 *Case of Rupture of Corpus Luteum with Intraperitoneal Hemorrhage. M. R. Bookman, New York.
- 6 Abdominal Wall Hernia. A. B. Keyes, Chicago.
- 7 *Mortality in Cesarean Section. G. M. Boyd, Philadelphia.

3. **Experimental Ligation of One Ureter.**—Jones has ligated the ureter in fifty-two dogs; and the results of this work together with observations on a personal clinical case of probable ureteral obstruction by accident, constitute the basis of this paper. Its length and detail do not permit of making an abstract. Therefore the original should be consulted.

5. **Rupture of Corpus Luteum.**—Bookman is of the opinion that suddenly increased intra-abdominal pressure of trauma predisposes to the rupture of the forming or newly formed corpus luteum. The small so-called hemorrhagic cysts of the ovary when ruptured may easily cause laceration and bleeding. Cases of intraperitoneal hemorrhage due to this cause are frequently mistaken for ruptured extra-uterine pregnancy or acute appendicitis. Ovarian apoplexy, ruptured hemorrhagic cysts of the ovary, ovarian and pelvic hematoceles (when due to no other cause), ovarian hematomata and hemorrhage into the peritoneal cavity from a ruptured corpus luteum, may all be grouped as having the same etiology, differing only in degree. With acute pelvic pain at or about the time of menstruation slight rise of temperature, signs of peritoneal irritation with some anemia and a history of straining, the existence of a ruptured corpus luteum must be kept in mind. Treatment of the mild cases is symptomatic, of the severe cases, surgical. Prognosis is usually good in all cases except in those with associated pathologic blood conditions.

7. **Mortality in Cesarean Section.**—Boyd cites forty-eight cases of cesarean section. He says that the mortality in cesarean section depends on the skill of the operator and the condition of the patient at the time of operation. In

clean cases, operated on before labor, the maternal mortality should not be more than from 2 to 3 per cent. When the case is under careful supervision, the labor test does not necessarily contra-indicate the classical operation, but after the membranes rupture, there exists danger of infection. The classical operation should not be performed in cases undoubtedly infected. The chief indication for the extra-peritoneal or transperitoneal section is the "neglected case," or when that is mildly infected. When, however, the patient is seen late in labor, and undoubtedly infected, then, because of the high mortality, probably 25 per cent., supravaginal hysterectomy must be performed.

American Journal of Roentgenology, Detroit

June, I, No. 8, pp. 313-330

- 8 *Practical Results in Roentgen Ray Examination of Mastoid. S. Lange, Cincinnati.
- 9 Antero Posterior Position for Mastoid Roentgenography. P. M. Hickey, Detroit.
- 10 *Further Consideration of Roentgen Diagnosis of Luetic Skeletal Manifestations. P. Brown, Boston.

8. Abstracted in THE JOURNAL, Nov. 15, 1913, p. 1841.

10. Abstracted in THE JOURNAL, Nov. 8, 1913, p. 1743.

Boston Medical and Surgical Journal

September 17, CLXXI, No. 12, pp. 437-472

- 11 *Treatment of Hemoptysis in Pulmonary Tuberculosis. N. B. Burns, North Reading.
- 12 Treatment of Phthisis by Pulmonary Compression. C. Floyd, Boston.
- 13 Present Status of Artificial Pneumothorax Therapy. J. A. Lyon, Rutland.
- 14 Artificial Pneumothorax in Treatment of Pulmonary Tuberculosis. H. D. Chadwick, Westfield.
- 15 Id. Should Method Be Used? F. T. Lord, Boston.
- 16 Roentgen Ray as an Aid to Diagnosis of Pulmonary Tuberculosis. P. C. Bartlett, Boston.
- 17 Id. H. W. Van Allen, Springfield.
- 18 Id. P. H. Cook, Worcester.
- 19 Diagnosis and Treatment of Tuberculosis in Childhood. W. C. Bailey, Boston.
- 20 Roentgen Ray in Tuberculosis of Children. W. J. Dodd, Boston.
- 21 Tuberculosis in Children. R. M. Smith, Boston.

11. Treatment of Hemoptysis in Pulmonary Tuberculosis.

—Applying his principles to an actual case, the following procedure is the one adopted by Burns in these cases. The patient is placed in a semirecumbent position, usually flat on his back, with curved basin at side of face for expectoration. Nitroglycerin $\frac{1}{100}$ -grain dose under the skin is immediately given from an emergency hypodermic unit. An ice-bag is placed on the chest and cracked ice is given by mouth for a few minutes. This should not be continued indefinitely after the initial excitement is passed, for the icebag is likely to cause trouble if applied for more than an hour at a time. In the meantime the physician quietly encourages the patient. Only ten patients have died of hemorrhage at North Reading since the institution was opened in 1909. Morphine is given with great reluctance and only in hopelessly advanced cases, in which the sole indication is to preclude all possible suffering.

When the hemorrhage is so extensive that the blood rushes into the bronchial passages of the well lung, causing dyspnea and cyanosis, it is best to turn the patient on his side with his head over the edge of the bed, allowing gravity to exert its influence in withholding the blood in the lung the worst diseased. Burns emphatically discourages the routine use of morphine in the usual case of hemoptysis. It seems better to him to open the intestinal tract freely in such cases. He uses magnesium sulphate in full doses, provided there are no positive contra-indications, as extreme asthenia, enteritis or any ulceration in the bowels.

No solid food is to be given for some hours after the initial attack, but cold milk or cold bouillon can be taken in small amounts at regular intervals. A dram of lime water is added to each 8 ounces of milk to improve its digestibility and to add to the body's calcium content. At the end of eighteen hours, barring recurrence, or heavy streaking, soft solids may be given. The patient is kept as quiet as possible. If an aggravating cough is present, small frequent doses of codein or heroin may be given, and with impunity so long as the bowels are kept open. Sodium nitrite and calcium sul-

phid each in 1-grain doses may be administered to the patient at three- to four-hour intervals for from twenty-four to forty-eight hours. Subsidence of streaking, as well as severe headache, call for discontinuance of sodium nitrite. Burns usually gives two doses of 1 ounce each of magnesium sulphate, one soon after the initial attack, and another on the second day. One week in bed with entire absence of streaked sputum is the requirement necessary before the patient is allowed up and about to any extent.

Bulletin of Lying-In Hospital of City of New York

June, IX, No. 4, pp. 249-342

- 22 Technic of Extraperitoneal Cesarean Section. B. C. Hirst, Philadelphia.
- 23 Five Cases of Extraperitoneal Cesarean Section. J. W. Markoe, New York.
- 24 *Craniotomies Done in Hospital from 1903 to 1913. E. S. Gushee, New York.
- 25 Cesarean Section. A. B. Davis, New York.
- 26 Certain Aspects of Midwife Problem in Relation to Medical Profession and Community. G. W. Kosmak, New York.
- 27 *Revival of Obstetric Chair. J. W. Markoe, New York.
- 28 Serum Diagnosis of Pregnancy by Dialysation Method. C. F. Jeilingshaus and J. R. Losee, New York.
- 29 Case of Birth Dislocation of Lower Femoral Epiphysis. E. D. Truesdell, New York.

24. **Craniotomies.**—From 1903 to 1913, there were delivered in the two services of the hospital, 52,133 patients. Among this number there were 322 craniotomies, 64 in the out-door service that is about $\frac{1}{3}$ of 1 per cent. of the deliveries, and 258 in the hospital, or in about 1 per cent. of the patients delivered. In the hospital proper over one-half of the cases in which a craniotomy was done were emergencies. They numbered 167, and the majority or 125 cases, had had unsuccessful attempts at delivery by physicians or midwives. This leaves 91 cases of craniotomy which occurred directly under the care of the hospital, which is about two-fifths of 1 per cent. of the 21,584 deliveries in the hospital service. Of these 91 craniotomies, there were 21 cases of eclampsia with premature dead babies, and 7 cases of placenta previa with premature dead babies. In the most of these cases the after-coming head was perforated to insure rapid delivery and to prevent severe cervical lacerations.

The indications for craniotomy in the two services were: Contracted pelves, 121; fetal death, 265; hydrocephalus, 14; cervical contractions (noted especially in premature cases), 34; tonic contraction of uterus, 6; cases of rapid delivery in interest of mother, placenta previa, 4, and eclampsia, 2. In 101 cases craniotomy of the after-coming head was done. Of the remaining 157 cases the basiotribe was used in 65, the cephalotribe in 43, the cranioclast in 32. In the remaining 17 there was no note as to the instrument used. Among the 258 craniotomies in the hospital there were 119 primiparae, 137 multiparae and 3 were not described. Over two-thirds were vertex presentations.

The number of deaths of mothers in the hospital were 35, or 10 per cent., of the number of cases in which craniotomy was performed, or one-tenth of 1 per cent. of the deliveries. Of the cases in the tenements on the other hand there was only one death of mother and in this instance a midwife had been in attendance for some forty-eight hours before the hospital was notified. Of the 36 deaths in the hospital 30 were among the emergency cases, in the remaining 6 the cause was as follows: 2 eclampsia, 1 diabetes mellitus and toxemia, 1 shock following hysterectomy for ruptured uterus, 1 endocarditis and chronic nephritis, 1 placenta previa. Of the 30 deaths in the emergency cases, 18 died from shock or hemorrhage, 9 from sepsis and 3 from eclampsia.

27. **Revival of Obstetric Chair.**—In looking about for a means of compelling the patients to assume the upright or squatting posture, the thought came to Markoe that a chair might be improvised that would keep the patient in the proper position and at the same time be comfortable or as comfortable as any woman can be when undergoing the pains of labor. Hence a chair was constructed which is depicted in this paper. The chair, it is believed, will be most useful during the first and early part of the second stage and is not

in any way intended as a delivery table, although it could be easily modified so that it could be used for both purposes. The illustrations would suggest that a chair may be so constructed that it could be carried from house to house and thereby facilitate its use in private practice.

California State Journal of Medicine, San Francisco

September, XII, No. 9, pp. 357-396

- 30 Intimate Relation of Orthopedic Surgery to Neurology. H. W. Wright, Santa Barbara.
- 31 Treatment of Gastric and Duodenal Ulcer. R. Bine and E. Schmoll, San Francisco.
- 32 *Surgery of Gastric Ulcer. L. Eloesser, San Francisco.
- 33 Dose of Salvarsan. D. W. Montgomery, San Francisco.
- 34 Early Diagnosis of Cancer of Rectum. A. J. Zobel, San Francisco.
- 35 Psychotherapy in Urology. V. G. Vecki, San Francisco.
- 36 Photography in Relation to Medical Sciences. H. D. Power, San Francisco.
- 37 Case of Oidiomycosis. W. W. Roblee, Riverside.
- 38 Perforated Duodenal Ulcer. B. J. O'Neill and G. T. Courtenay, San Diego.
- 39 Value of High Frequency Current in Treating Calculi in Diverticulum. M. Molony, San Francisco.

32. **Surgery of Gastric Ulcer.**—Eloesser summarizes his views as follows: Acute ulcer is not to be treated surgically unless: (a) perforated; (b) bleeding obstinately, or (c) intractable by medical means. Hematemesis should not be made an indication for operation unless the presence of a bleeding ulcer can be reasonably sure. A preliminary transfusion of blood will often give time for diagnostic examination and benefit the patient meanwhile. Chronic callous ulcers suspicious of malignancy should be treated by resection and gastro-enterostomy. Chronic ulcers of evident innocence should be treated by gastro-enterostomy with or without pyloric closure. The results of resection are not sufficiently better than those of gastro-enterostomy to compensate for the added risk. Gastric procedures should not be carried out unless indicated by clearly demonstrable gastric lesions. At all operations for gastric ulcer, the abdomen should be carefully examined for extragastric irritative or infectious processes. The treatment of these may be more important causally than the treatment of the ulcer itself. Gastric operations are not causally but symptomatically therapeutic. Prolonged postoperative medical care is imperative.

Canadian Medical Association Journal, Toronto

September, IV, No. 9, pp. 757-852

- 40 Medical Profession and Militia. J. A. Grant, Halifax.
- 41 Treatment of Empyema, Subphrenic Abscess, etc., by Aspiration Followed by Injection of Formalin Solution. A. McPhedran, Toronto.
- 42 Linitis Plastica. G. E. Armstrong, Montreal.
- 43 Hour-Glass Contraction of Stomach. Report of Three Cases. A. Primrose, Toronto.
- 44 Industrial Disease and Industrial Hygiene. C. J. Hastings, Toronto.
- 45 Canadian Practitioner's Diagnosis of Pulmonary Tuberculosis. A. F. Miller, Kentville, N. S.
- 46 Importance of Balkan Wars to Medical Profession of Canada. G. C. Jones.

Cleveland Medical Journal

August, XIII, No. 8, pp. 523-594

- 47 Nature of Cutaneous Sensation, with an Instrument for Its Measurement. W. Timme, New York.
- 48 Paleolithic Giants and Dwarfs. T. W. Todd, Cleveland.
- 49 Gastric Surgery. F. C. Herrick, Cleveland.
- 50 *Impurities that May Occur in Nitrous Oxid. H. D. Haskins, Cleveland.
- 51 Office Practice in Rectal Diseases. S. Englander, Cleveland.
- 52 Mercuric Chlorid Poisoning. Case History. C. W. Race, Evans-ton, Ill.
- 53 Fate in Organism of Degradation Products of Protein. H. H. Biggs, Cleveland.

50. **Impurities That May Occur in Nitrous Oxid.**—Haskins found that the impurities present in nitrous oxid when too high a production temperature is used are ammonia and nitric acid, set free by heat dissociation of ammonium nitrate. When produced in a metallic apparatus, the cooled impure gas contains free ammonia. As low a production temperature as practicable should be used. In a closed apparatus there is no reason why the acid and ammonia should not recombine when cooled, forming ammonium nitrate and thus leaving no

ammonia or acid in the free state. If, however, the gas apparatus is metallic, some of the nitric acid is consumed in forming a salt with the metal, and the corresponding amount of ammonia cannot recombine with acid, so that it is left in the free state in the nitrous oxid. This poisonous gas must be removed by bubbling the nitrous oxid through dilute sulphuric acid.

Delaware State Medical Journal, Wilmington

July, V, No. 8, pp. 1-26

- 54 Morphine, Limitations and Uses as an Aid to Anesthesia. J. S. Keyser, Wilmington.

Indiana State Medical Association Journal, Fort Wayne

September, VII, No. 9, pp. 397-460

- 55 Direct Laryngoscopy, Bronchoscopy and Esophagoscopy with Modified Bruning's Bronchoscope. D. W. Layman, Indianapolis.
56 Prevalence and Manifestations of Malaria. G. D. Marshall, Kokomo.
57 Metastatic Infection. F. S. Cuthbert, Kingman.
58 Hemoptysis and Its Treatment. J. R. Stewart, Colorado Springs, Colo.

Journal of Biological Chemistry, Baltimore

September, XIX, No. 1, pp. 1-140

- 59 *Variations in Fat Content of Blood under Approximately Normal Conditions. W. R. Bloor, St. Louis.
60 Researches on Purines. C. O. Johns and B. M. Hendrix, New Haven, Conn.
61 Urea and Total Non-Protein Nitrogen in Normal Human Blood: Relation of Their Concentration to Rate of Elimination. F. C. McLean and L. Selling, Portland, Ore.
62 Elimination of Phenolsulphonephthalein in Acute and Chronic Tartrate Nephritis. F. P. Underhill and N. R. Blatherwick, New Haven, Conn.
63 Inhibition of Autolysis by Alcohol. H. G. Wells and G. T. Caldwell, Chicago.
64 *Phosphorus Content of Casein. A. W. Bosworth and L. L. van Slyke, New York.
65 *Cause of Acidity of Fresh Milk of Cows and Method for Determination of Acidity. L. L. van Slyke and A. W. Bosworth, New York.
66 Proteins of Blood of *Limulus Polyphemus*. L. C. L. Alsberg, Woods Hole, Mass.
67 Metabolism of an Isomer of Xanthin and Some Isomers of Methylxanthins. S. Goldschmidt, New Haven, Conn.
68 Drying Urine for Chemical Analysis. W. W. Braman, Philadelphia.
69 Excretion of Creatinin by Normal Women. M. Tracy and E. E. Clark, Philadelphia.
70 *Studies in Carbohydrate Metabolism. Influence of Subcutaneous Injections of Dextrose and Calcium Lactate on Blood-Sugar Content and on Tetany after Thyropara-Thyroidectomy. F. P. Underhill and N. R. Blatherwick, New Haven, Conn.
71 *Comparative Efficiency for Milk Production of Nitrogen of Alfalfa-Hay and Corn Grain. E. B. Hart and G. C. Humphrey, Madison, Wis.

59. **Fat Content of Normal Blood.**—Bloor found that feeding fat in the ordinary way caused an increase in the fat content of the blood beginning in about one hour after feeding and reaching a maximum in about six hours. When the thoracic duct was tied there was no increase in blood-fat after fat feeding. Intravenously injected fat as casein emulsions or in colloidal suspension up to 0.4 gm. per kilo of body-weight—enough to increase the fat content 100 per cent., disappeared from the blood in less than five minutes. Since the particles were from $\frac{1}{2}$ to $\frac{1}{4}$ the size of the red blood-corpuscles, the disappearance could scarcely have been due to a straining out by the capillaries, but rather to a storage in some way or other, possibly by the liver, since it has been shown that the injected fat accumulates in largest amount in the liver. When amounts of fat up to 0.8 gm. per kilo in the form of egg yolk were injected, some of the fat persisted in the blood for several hours, which might have been due to the flooding of the temporary storehouses beyond their capacity, or to the influence of the lecithin in the egg-yolk fat. Fasting of from five to seven days may or may not produce an increase in the blood-fat, depending apparently on the nutritional condition of the animal. An animal which did not ordinarily show any increase in blood-fat in fasting, was made to exhibit the usual curve of increase of blood-fat in fasting by stuffing with fat food for a week before the fast. Of the narcotics used, ether was the only one which ordinarily

produced a rise in the fat content of the blood during the narcosis. Chloroform produced a rise in blood-fat only when the animal had been stuffed with fat for some time previously. The "after rise" in the blood-fat, i. e., an increased blood-fat content during the two or three days following narcosis was observed after chloroform and morphine but not after ether (only one case examined). Bloor's results as a whole indicate that fat may be stored in two ways: (1) a temporary storage in which the fat may be quickly but loosely stored and whose capacity is limited, and (2) the permanent fat depots which take up fat slowly and release it slowly.

64. **Phosphorus Content of Casein.**—By treating a solution of casein in dilute NH_4OH with ammonium oxalate and an excess of NH_4OH and letting stand twelve hours, the authors found that the phosphorus content is reduced to about 0.70 per cent. This lower percentage can not be explained as being due to hydrolysis of casein and splitting off of phosphorus. While some of the casein is hydrolyzed, this portion does not enter into the final preparation and does not affect its composition, because the hydrolyzed portion is not precipitated by acetic acid while the unhydrolyzed part is. Analysis of various preparations of casein containing varying amounts of ash show a general correspondence between the ash and phosphorus content.

65. **Acidity of Cow's Milk.**—The authors claim that the acidity of fresh milk is due to the presence of acid phosphates. Titration of phosphoric acid with alkali, in the presence of calcium salts, results in hydrolysis of dicalcium phosphate formed during the titration, whereby free calcium hydroxid and phosphoric acid are first formed and then calcium hydroxid unites with more dicalcium phosphate to form insoluble tricalcium phosphate. As a result of these reactions more alkali is required to make a solution, containing calcium and phosphoric acid, neutral to phenolphthalein, than is required in the absence of calcium. The calcium must be removed previous to titration by treatment of 100 c.c. of milk and 2 c.c. of saturated solution of neutral potassium oxalate.

70. **Thyroparathyroidectomy.**—According to the authors hypoglycemia resulting from thyroparathyroidectomy is neither the cause nor the effect of the accompanying tetany; for although dextrose injections restore blood-sugar content to normal, such injections have little influence over tetany. Moreover, the condition of hypoglycemia precedes that of tetany. It is therefore suggested that the removal of the thyroids and parathyroids gives rise to two distinct effects, one being manifested on the blood-sugar regulating mechanism, causing hypoglycemia, the other acting on the nervous system, producing tetany. Calcium appears to be intimately associated with both effects, for injections of calcium lactate will temporarily restore blood-sugar to normal and also abolish tetany for a time. Calcium may play an important rôle in maintaining the equilibrium of the blood-sugar regulating mechanism during normal life.

71. **Milk Production of Nitrogen of Alfalfa Hay and Corn Grain.**—Data are presented by Hart and Humphrey on the comparative value for milk protein production of the nitrogen from alfalfa hay and the corn kernel. The data indicate that on the plane of intake used the nitrogen of alfalfa hay is as effective for milk protein building as that of the corn kernel. The acid amid nitrogen of alfalfa is very low in amount, constituting about 1 per cent. of the total nitrogen, while the amino-acid nitrogen makes about 10 per cent. of the total nitrogen. It is well established that amino nitrogen has nutritive value and that of alfalfa hay is probably not an exception. Their experiments give no indication of the value of the acid amid nitrogen. The real nutritive value of the nitrogen of roughages should rest on the nature of the total amino-acid content derived from more complex proteins and preexisting free amino-acids rather than on the proportion of "amid" nitrogen as found by the Stutzer method.

Alfalfa hay has specific diuretic properties and its ingestion was generally followed by a marked rise in the output of

urine. This rise in renal activity caused a depression in the milk flow which again rose in volume as the alfalfa hay was withdrawn from the ration. The diuretic stimulus caused in some cases a shrinkage in volume of 5 to 6 pounds on a flow of 25 pounds daily. It is possible that this diuretic effect is due to salts contained in the hay, yet the possibility of the presence of specific substances of organic nature is not excluded.

Journal-Lancet, Minneapolis

September 15, XXXIX, No. 18, pp. 475-499

- 72 Visit to Surgical Clinics of Russia, Finland, Sweden, Norway, Denmark and Belgium. W. J. Mayo, Rochester.
- 73 Management of Hare-Lip and Cleft-Palate Cases. R. E. Farr, Minneapolis.
- 74 Elephantiasis Lymphangitica. H. L. Staples, Minneapolis.

Journal of Outdoor Life, New York

September, XI, No. 9, pp. 257-286

- 75 *Value of Tuberculin in Treatment of Tuberculosis. J. A. Miller, New York.
- 76 Those Who Help Themselves. H. Shigley, Colorado Springs, Colo.
- 77 Needs of Patients Discharged from Tuberculosis Sanatoria. C. F. Bolduan, New York.
- 78 After Sanatorium—What? S. E. Goldstein, New York.
- 79 Employment of Sanatorium Graduates. D. R. Lyman, Wallingford, Conn.
- 80 Letter to Life. C. H. Fahs, Madison, N. J.
- 81 Our Foreign-Born Population as Factor in Tuberculosis Problem. W. L. Rathbun, Otisville.
- 82 Frequency of Tuberculosis among Negro Laundresses. H. D. King, New Orleans.

75. Tuberculin in Treatment of Tuberculosis.—Miller says that the great majority of cases of tuberculosis had better never be treated with tuberculin at all, but for certain other cases the selection of which should always be left to an experienced physician, the results appear excellent. In general, he says, the more suitable cases are those in which the disease has become localized in the system. This is best seen in cases of so-called surgical tuberculosis, that is, of bones, glands or joints, etc., and similarly in the more localized chronic cases of pulmonary tuberculosis. The injection of small increasing doses of tuberculin seems to influence favorably the course of the disease as evidenced by diminution of general symptoms with a corresponding improvement in general health, and, particularly, by diminishing the liability to relapse when the patient goes back to ordinary methods of life.

Another way in which tuberculin can be given is by what is known as auto-inoculation. If a patient with tuberculosis takes physical exercise or does physical work it is shown that there is produced a reaction in the blood, due to the absorption of the poison from the diseased area. This poison, to all intents and purposes, corresponds to the artificial tuberculin without the necessity of the hypodermic injections. This method is now in use in a number of places and good results have been reported. However, this method should never be carried out except in cases in which the patients are under the very strict supervision of expert physicians. The results reported from it are similar to those reported by the use of injections of tuberculin, and the type of cases in which it is employed is the same. Certain it is that the tuberculin and similar methods of treatment designed to act favorably in tuberculosis by influencing the resistance or immunity to the disease have a limited field of usefulness. In the first place the cases which are suitable for this treatment are but a small portion of the whole number. Second, the amount of increased resistance obtained is relative and not absolute. Any increased resistance or immunity to tuberculosis which tuberculin treatment may produce is very limited. Tuberculin is in no sense a cure for tuberculosis, but is simply an aid to the other generally accepted methods of treatment, such as good food, fresh air, and the proper regulation of rest and exercise.

Lancet-Clinic, Cincinnati

September 12, CXII, No. 11, pp. 277-304

- 83 Myoclonias—Paramyoclonus Multiplex. H. H. Hoppe, Cincinnati.
- 84 Examination of Policy Holders by Life Extension Institute. C. H. Castle, Cincinnati.

- 85 Graduates of Medical Department of University of Pennsylvania Who Have Taught or Practiced in Cincinnati. A. G. Drury, Cincinnati.

Medical Record, New York

September 19, LXXXVI, No. 12, pp. 489-530

- 86 Thyroid Deficiency. E. Hertoghe, Antwerp, Belgium.
- 87 Intratracheal Insufflation. B. M. Ricketts, Cincinnati.
- 88 Epidemic of Typhus Fever in Van, Turkey. C. D. Ussher, Van, Turkey.
- 89 Diabetes Mellitus Following Interval Operations of Bilateral Mastoidectomy and Unilateral Excision of Ethmoid, Sphenoid and Maxillary Sinuses. V. Dabney, Washington, D. C.
- 90 Modification of Crile Cannula. A. Kahn, New York.

Northwest Medicine, Seattle, Wash.

September, VI, No. 9, pp. 257-290

- 91 *Experiences with Radium in Treatment of Cancer and Other Morbid Growths. K. A. J. MacKenzie, Portland, Ore.
- 92 Ether Anesthesia. G. L. Closson, Seattle.
- 93 Nitrous Oxid and Oxygen Anesthesia. H. L. Geary, Seattle.
- 94 Local Anesthesia. T. Torland, Seattle.
- 95 *Sugar Solution by Proctoclysis in Postoperative Treatment. C. M. Barbee, Portland, Ore.
- 96 Jacksonian Epilepsy, Reference to Its Surgical Treatment. A. T. R. Cunningham, Spokane.
- 97 Use of Colored Lenses to Cut Down Heat Radiation and Neutralize Ultraviolet and Infra-Red Light Rays. F. F. Casseday, Portland, Ore.

91. Radium in Treatment of Cancer.—Although the range of MacKenzie's experience has been limited, he points with great satisfaction to the treatment of a considerable group of cases, which, treated by radium, have shown striking results, the best having been obtained in the treatment of malignant diseases, especially cancers. The complete list, however, includes also cases of sarcoma, rodent ulcer, angioma or nevi of different kinds, especially the prominent arterio-venous variety, pigmentary nevi, keloids and disfiguring scars, lupus, the tubercular form and lupus erythematosus, inveterate and chronic patches of skin disease, urethral caruncles, warts, moles and certain chronic neuralgias. In practically nearly all the cases treated, which have been selected with care, and apparent complete cure has been the result, and up to the present time no case has been encountered in which recurrence has taken place.

95. Sugar in Proctoclysis.—The results of Barbee's experience with sugar solution have been gratifying. Barbee says it is a valuable adjunct in treatment in which water is demanded and in which the stomach cannot be utilized for this demand. By careful observation and comparison in over 150 cases he is assured that postoperative shock is lessened, the circulation quickly equalized, vomiting diminished, thirst allayed, perspiration induced, kidney excretion increased, gas eliminated, ileus less common and, as in most of these cases in which the stomach cannot be utilized for several days, a valuable food element is constantly absorbed. Thus far he has met with only a few instances in which the patient did not satisfactorily absorb the solution. The most of these could be charged directly to faulty technic in the use of the "Murphy drip."

Sugar water is rapidly absorbed by the rectum, is practically non-irritant and seems to exercise a general stimulating effect. The strength of the solution used is 15 gm. of cane-sugar and 1 liter of water. It is administered by the (Murphy) drop method at the rate of 30 to 40 drops per minute. The rate may be increased or diminished according to the patient's needs for water, or according to the rate of absorption. This rate will use approximately 3 quarts of the solution in twenty-four hours. The approximate caloric value of the contained sugar is 200 large calories. Repeated urine examinations in many of the cases fail to show its presence in the urine. In two cases of gastro-enterostomy the solution ran continuously for seven days. Nourishment in no other form was given. The patients did not complain of the slightest hunger, kept their weights and no sugar appeared in the urine. These results lead Barbee to believe that the sugar administered by rectum is converted into glucose and utilized by the tissues.

The sugar water is started as soon as the patient is put into bed from the operating-table. If there be much shock, if the patient be deeply anesthetized or if vomiting, he is left flat until the position can be altered to a low Fowler, in which position proctoclysis is most successful. There are many conditions in which the patient must remain flat, but the great majority of cases may and should receive some elevation at the head. Within a short time the pulse increases in volume, the skin becomes warm and moist, followed by free perspiration, there is much less or no thirst, vomiting is lessened, kidney excretion increased and gas escapes. When these results are obtained and maintained, Barbee says, they are past postoperative shock and the fear of ileus. With a few exceptions these results follow the use of sugar solution by proctoclysis.

Ohio State Medical Journal, Columbus

September, X, No. 9, pp. 519-574

- 98 Thymic Asthma. H. J. Morgan, Toledo.
- 99 Professional Ethics; Professional Jealousy and Other Matters. H. E. Beebe, Sidney.
- 100 Full-Time District Physicians: How the Plan Operates in Cincinnati. J. H. Landis, Cincinnati.
- 101 Rupture of Urethra Following Fracture of Pelvis. C. M. Harpster, Toledo.
- 102 Prescription, Facing Lenses and After-Treatment. B. L. Millikin, Cleveland, F. K. Smith, Warren, and M. D. Stevenson, Akron.
- 103 Unique Fracture Dislocation of Hip. F. J. Schmoldt, Cleveland.
- 104 Definite Plan for System of "Health Supervision" of School Children in Ohio. P. B. Brockway, Toledo.

Pennsylvania Medical Journal, Athens

September, XVII, No. 12, pp. 933-1006

- 105 Early Diagnosis and Treatment of Syphilis. B. J. Wetherby, Wilkes-Barre.
- 106 State Tuberculosis Dispensaries. A. P. Francine, Philadelphia.
- 107 State Sanatoria for Tuberculosis. W. G. Turnbull, Cresson.
- 108 Multiple Papillomata of Vocal Cords. N. P. Stauffer, Philadelphia.
- 109 Study of Coagulation Time of Blood in Several Species. G. M. Dorrance, Philadelphia.
- 110 Case of Osteo-Arthritis of Spine. A. H. O'Neal, Wayne.
- 111 Opium Habit. D. J. Hetrick, Harrisburg.
- 112 Answers to Some Practical Questions on Use of Pituitary Extract in Obstetrics. J. O. Arnold, Philadelphia.
- 113 Experience with Crotalin at Oakburne Epileptic Colony. N. S. Yawger, Philadelphia.

Southern Medical Journal, Mobile, Ala.

September, VII, No. 9, pp. 687-764

- 114 Malaria and Blackwater Fever in Southern Rhodesia. W. C. Gorgas, Ancon, Canal Zone.
- 115 *Arterial Hypertension and Hypotension in Medicine and Surgery. H. H. Roberts, Lexington, Ky.
- 116 Importance of Early Recognition of Paresis. J. K. Hall, Richmond, Va.
- 117 Amebic Dysentery. J. Kenan, Selma.
- 118 Intravenous Administration of Salvarsan in Babies. L. W. Elias, Asheville, N. C.
- 119 *Verrucose Dermatitis. H. H. Hazen, Washington, D. C.
- 120 Supreme Civic Law. O. Dowling, New Orleans.
- 121 Innocent Criminal. A. H. Cook, Hot Springs, Ark.
- 122 Obstetric Management from View Point of General Practitioner. I. Kimball, Auburn.
- 123 Cesarean Section in Eclampsia. H. R. Shands, Jackson, Miss.
- 124 Diagnosis of Fibroid of Uterus and Importance of Early Surgical Interference. A. W. Ralls, Gadsden.
- 125 *Diaphragmatic Hernia. Report of Case. S. McGuire, Richmond, Va.
- 126 Factors Necessary to Make Correct Surgical Diagnosis. E. D. Newell, Chattanooga, Tenn.
- 127 Early Operative Treatment for Cranial Lesions. F. Y. Cronk, Guthrie, Okla.
- 128 Inflammatory Pathology of Tonsil. B. C. Willis, Richmond, Va.
- 129 Enucleation of Eyeball with Implantation of Gold Ball. M. H. Biggs and H. Norris, Rutherfordton, N. C.

115. **Arterial Hypertension and Hypotension.**—In the management of hypertension cases Roberts disapproves of the use of vasodilators. If the tension is above the danger line and it is imperative that immediate action be taken to prevent hemorrhage or acute dilatation, then, he says, there is nothing which will give more immediate or lasting effect than to resort to venesection. In all cases with marked hypertension the patient should be put to bed, and the eliminative forces should be increased and all fluids restricted. A low protein diet should be ordered and all those conditions which are intensifying the hypertension actively treated. For the man-

agement of those cases of hypertension in which the danger line has not been crossed, a select diet which is nutritious, but low in animal proteins, should be given. Massage, selective hydrotherapy and a systematic form of exercise, preferably taken in the open air, should be advised.

119. **Verrucose Dermatitis.**—Surgical treatment in Hazen's opinion is undoubtedly the quickest way of curing the condition. Salves and ointments are absolutely useless, except to prevent the spread of the malady and to allay itching. So far as Hazen's experience goes neither radium nor the Roentgen ray has helped, although he admits that either of these two remedies might prove beneficial. The best treatment is probably thorough curettage, under a general anesthetic, and cauterization with either the actual cautery or the acid nitrate of mercury. Preliminary curettage is to be preferred, because one can tell by the "feel" of the curet about how much tissue it is necessary to remove.

125. **Diaphragmatic Hernia.**—Following a stab wound in the posterior axillary line about the third intercostal space on the left side of the chest, McGuire's patient developed a diaphragmatic hernia. The history, symptoms, physical examination and roentgenographic findings all pointed to diaphragmatic hernia, with escape of practically the entire stomach into the left thoracic cavity. A very dense and firm adhesion was found between the cardiac end of the stomach and the posterolateral surface of the chest wall just opposite the stab wound. This was peeled loose after considerable effort and there was at once the escape of some stomach contents. The stomach was delivered through the opening into the thorax and an incision 3 inches long found on its anterior surface beginning near the esophageal opening and extending in the direction of its greater curvature. The edges of this incision did not bleed and showed evidences of cicatrization, hence it seems reasonable to believe that the rupture of the diaphragm and hernia of the stomach resulted from a blow and injury inflicted on the abdomen prior to the cutting, and that when the stab wound was made in the third intercostal space the vulnerating instrument cut the stomach which was already in the left thoracic cavity. The rupture in the diaphragm was about 4 inches in length, beginning near the esophageal opening and extending through the left leaf toward the sternum. The patient recovered.

Washington Medical Annals

September, XIII, No. 5, pp. 279-334

- 130 Early Diagnosis and Prevention of Cancer. T. Abbe, Washington, D. C.
- 131 Case of Intestinal Adhesion. I. S. Stone, Washington, D. C.
- 132 Hay-Fever. D. G. Smith, Washington, D. C.
- 133 Case of Voluntary Displacement of Eye. A. H. Kimball, Washington, D. C.
- 134 Hairballs. D. S. Lamb, Washington, D. C.
- 135 *Postoperative Leukocyte Count, with Especial Reference to Appendicitis. C. S. White, Washington, D. C.
- 136 Case of Syphilitic Multiple Sclerosis; Diagnosed Clinically in Spite of Negative Laboratory Tests. T. A. Williams, Washington, D. C.
- 137 *Relation of Systolic and Diastolic Blood-Pressure in Diagnosis of Certain Acute Circulatory Conditions. H. H. Newman and M. B. Fischer, Washington, D. C.
- 138 Faith Cures and How They Act, Contrasted with Principles of Scientific Mental Healing. Case Reports. T. A. Williams, Washington, D. C.

135. **Postoperative Leukocyte Count with Reference to Appendicitis.**—After catarrhal appendicitis or mild infections, with removal of the source, White says, we may expect an initial leukocytosis, followed by a gradual and permanent decline in the absence of complications. After a mild infection and the cause removed, a secondary infection of a small area or a transient toxemia is noted by a moderate leukocytosis, usually present after the first week of the illness. Secondary infection of the peritoneum with good resistance shows an early and high increase of the leukocytes and will continue for an extended period; the pulse and temperature alone are misleading, but the leukocyte count as an adjunct gives much better insight into the mischief within the abdomen. With general peritonitis infection, with a constant low count or a declining leukocytosis, the prognosis is very bad.

137. Systolic and Diastolic Blood-Pressure in Circulatory Conditions.—Newman and Fischer believe that a fall in blood-pressure associated with decreased pulse pressure is indicative of heart failure; whereas a fall in pressure associated with increased pulse pressure is indicative of hemorrhage or shock. The cases they have observed seem to adhere to their theory. Slight changes in the systolic and diastolic relation are not to be relied on. Cases should be observed frequently in order that the state of the circulation be understood. Knowing the previous state of the circulation, a fall in pressure should be carefully studied, in order that proper interpretations of the changes be made. The authors urge that the systolic and diastolic blood-pressure be taken on all surgical cases, before, during and after the operation. Such findings, in their opinion, might be of service in diagnosis in circulatory crises. They further urge that blood-pressure readings be made on all cases likely to have acute circulatory conditions.

West Virginia Medical Journal, Wheeling

September, IX, No. 3, pp. 75-108

- 139 Newer Concepts of Gall-Bladder Disease. W. W. Babcock, Philadelphia.
- 140 Diabetes Insipidus. Report of Case. J. W. Preston, Roanoke, Va.
- 141 Metastatic Infections of Joints—Etiologic Factors, Diagnosis and Treatment. E. F. Peters, Maybourn.
- 142 Skiagraphy and Interpretation of Negative. R. H. Pepper, Huntington.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

September 5, II, No. 2801, pp. 421-456

- 1 Educational Number.

Edinburgh Medical Journal

September, XIII, No. 3, pp. 193-288

- 2 *Pathology and Etiology of Duodenal Ulcer. D. P. D. Wilkie.
- 3 *Bacteriologic Study of Tuberculosis of Lymph-Nodes in Children. A. F. Mitchell.
- 4 Healing Process of Infantile Bronchial Lymph-Node Tuberculosis. E. Rist.
- 5 *Bronchogeneous, Placentogeneous, Dermatogeneous, and Enterogeneous Infection with Tuberculosis in Infancy. C. von Pirquet.
- 6 *Gluteal and Crural Types of Fibrositis: Their Relationship to Spurious and Genuine Sciatica. L. J. Llewellyn and A. B. Jones.
- 7 Doctors in Some Recent French Plays. J. B. Adams.
- 8 Medical-legal Problem: Visual Conditions Necessary for Shooting. W. G. Sym.
- 9 Case of Dyspittuitarism. A. W. Falconer.
- 10 Cesarean Section in Primipara with Ovarian Cyst. P. Leighton.

2. Pathology and Etiology of Duodenal Ulcer.—Although as a rule readily diagnosed, Wilkie says, a chronic duodenal ulcer may occasionally exist and give rise to none of the characteristic symptoms, the first evidence of such a "silent" ulcer being sometimes its perforation. "Silent" duodenal ulcers are met with most frequently in the subjects of arteriosclerosis, and are found for the most part on the posterior wall of the duodenum. Some toxic or irritative factor, usually within the abdomen and most frequently associated with the colon or appendix, is found in a large proportion of cases of chronic duodenal ulcer.

Wilkie suggests that probably many acute duodenal ulcers are primarily follicular ulcers from the breaking down of inflamed lymph follicles. Whatever be the primary cause of a gastric or duodenal ulcer, spasm of the muscular coats of the viscus is an important factor in determining its chronicity. The situation of the opposing ulcers on the anterior and posterior walls of the duodenum on the boundary zone of the areas supplied by the anterior and posterior branches of the supraduodenal artery suggests that a common vascular deficiency rather than a contact infection accounts for the peculiar tendency to chronicity and recurrence.

This vascular deficiency, Wilkie believes, may be due to arteriosclerosis, but probably it is usually due to spasm of the muscular coats of the duodenum induced by a slight local

anemia consequent to strain on the supraduodenal vessels, this muscular spasm being favored by the increased vagotonus and the irritable condition of the autonomic nervous system which exists in such cases. The sex incidence of duodenal ulcer is explained by Wilkie on anatomic grounds. The relatively high pylorus and short fixed duodenum of the male allows of its vascular supporting ligament, the hepatoduodenal ligament, being exposed to strain, which in the female, with her relatively low pylorus and lax duodenum, is borne by the left border of the gastrohepatic omentum and lesser curvature of the stomach. The fixity of the male duodenum further predisposes to kinking at the first duodenal angle, and thus to an unduly long exposure of its first part to the acid chyme from the stomach, undiluted by bile or pancreatic juice, the regurgitation of which is impeded.

3. Tuberculosis of Lymph-Nodes in Children.—The total number of cases examined by Mitchell was twenty-nine, all being children under 12 years of age. At each necropsy particular attention was directed toward the three chief groups of lymph-nodes—the cervical, bronchial and mesenteric. Occasionally the tonsils were also examined. Cultures were isolated from twelve cases. Eight cases yielded cultures of human tubercle bacilli; in four cases they were of the bovine type. In the four bovine cases there was more extensive and advanced caseation of the mesenteric glands than of any other group of glands.

The bronchial and mesenteric glands of eighteen children who presented at necropsy no visible lesions of tuberculosis were tested on guinea-pigs for the presence of tubercle bacilli. In thirteen of these cases the cervical glands, and in two the tonsils, were also tested. Tubercle bacilli were demonstrated to be present in a single case in the bronchial glands of a child aged 4 years; the bacilli were of the human type. Of eighty cases of tuberculous cervical glands in children examined by Mitchell the bovine bacillus was present in seventy-one instances (88 per cent.), and the human bacillus in nine (12 per cent.). Without exception, the cases were those of children 12 years of age and under. The maximum incidence occurred during the second year of life. *Most of the cases were brought to hospital on account of a lump in the neck, which had been present for a varying period. The average duration of the illness before surgical advice was sought was seven and a half months. A careful search was made in every case of the existence of pulmonary tuberculosis in the parents and other members of the household.

As regards the bovine cases, it seems more than a coincidence that in not a single case was there a history of pulmonary tuberculosis in other members of the family. In sixteen cases, however, one or more of the children in the respective families were affected with various forms of surgical tuberculosis. Out of eight cases of abdominal tuberculosis in children observed, seven have proved to be of bovine origin and one of human origin. All the children were under 12 years of age, and had been fed on raw milk. It is interesting to note that in the human infection the father of the patient suffered from chronic pulmonary tuberculosis.

5. Infection with Tuberculosis in Infancy.—For the first year of life, von Pirquet says, the bronchogeneous infection with tuberculosis is by far the most frequent way of entry (about 95 per cent. of all infections). The enterogeneous infection is not important—at least, not in Austria (1 per cent. to 2 per cent. of all infections). A placentogeneous infection of the fetus is a rarity, as is also stomatogeneous and dermatogeneous infection. Prophylaxis of infant tuberculosis has chiefly to deal with the separation of the nursing from the coughing adults.

6. Gluteal and Crural Fibrositis.—In attempting to differentiate the spurious sciatic pains of gluteal or crural fibrositis from the true sciatica, Llewellyn and Jones state, attention should be paid to the following points: 1. The pain is referred not to the sciatic nerve, but to the muscular and fascial structures. 2. There is an absence of tenderness over the nerve trunk and also of sensory paresthesia referred to its area of distribution. 3. The pain, too, differs from sciatica in that it

is less radiating, partaking rather of a diffuse feeling of tenseness or stiffness referred more especially to the fibrous attachments of the affected muscles or aponeuroses. 4. The pain in uncomplicated gluteal fibrositis is less severe, though more constant, and lacks, moreover, the tendency to paroxysmal exacerbation so typical of true sciatic neuralgia. 5. The pain in fibrositis is evoked or aggravated by the particular movements subserved by the affected muscles. Thus, in the case of the gluteus maximus, difficulty in rising from a sitting posture or walking upstairs, and in the gluteus medius internal rotation of the thigh, are the movements entailing most discomfort. 6. On the objective side nodules or infiltrations are to be detected in the implicated muscles of fascia.

Glasgow Medical Journal

September, LXXXII, No. 3, pp. 161-239

- 11 Practical Points in Abdominal Surgery. T. K. Dalziel.
- 12 Case of Complete Auriculoventricular Heart-Block. G. A. Allan.
- 13 Six Cases of Lumbar Nephrectomy and One Case of Resection for Renal Vairix. D. Newman.

Indian Medical Gazette, Calcutta

August, XLIX, No. 8, pp. 297-336

- 14 Anatomic Terminology. C. Milne.
- 15 Segregation and Kala-Azar. W. M. Young.
- 16 *Operation of Election for Radical Cure of Inguinal Hernia. E. A. R. Newman.
- 17 Prevention of Malaria in Troops of Indian Empire. P. Hehir.
- 18 *Treatment of Cholera by Intraperitoneal Injection of Iodin. J. J. A. Brachio.
- 19 Cases of Intestinal Obstruction. C. Brodribb.
- 20 Case of Suspected Addison's Disease Aggravated by Ascaris Lumbricoides and Hysteria. P. S. Bedell.
- 21 New Pedicle Suture. T. H. Foulkes.
- 22 Case of Absence of Uterus. B. K. Chowdry.

16. Radical Cure of Hernia.—The fat and subcutaneous tissue having been divided and all bleeding points secured, Newman splits the aponeurosis of the external oblique parallel to its fibers throughout the length of the wound, including the intercolumnar fascia at the inner angle. The wall of the supposed sac, when found, is held up at any point with a pair of dissecting forceps and carefully nicked with the knife. The opening is then enlarged longitudinally for an inch or more with the scissors. In the funicular variety of hernia with the forefinger inside the sac and the sac wall held between it and the thumb, the sac is most rapidly and generally quite easily, separable from the apex to neck by wiping the tissues of the cord off it with a gauze swab. The cord proper is but little interfered with and it is usually unnecessary to lift it more than partially from its bed.

In the tunical variety the separation is more difficult because the vas deferens and spermatic plexus of veins are so intimately adherent to the posterior wall of the sac. The same procedure is followed, namely, wiping with a gauze swab, but along the adherent line a few touches with the knife are necessary. When the more easily separable portions of the funicular part of the sac have been freed, it is cut through transversely, thus separating it from the scrotal portion. The cut margin of the funicular portion is then clipped at intervals with forceps and held up, while the separation of the posterior adherent portion is completed right up to the internal ring.

In the funicular variety the sac after isolation is twisted into a cord at its neck, transfixed, ligatured and the redundant portion cut off. The stump is then drawn up into the abdominal cavity by passing the ends of the ligature in turn through the internal ring and the abdominal wall and tying them externally, the knot lying on the aponeurosis of the external oblique. In the tunical variety occlusion by ligature is usually impossible and a purse-string suture must be passed right around the neck and tied. This may be varied by passing the suture in case the sac is adherent, then crossing the ends and occluding the remainder of the neck by ligature. The redundant portion is next cut off and the stump drawn up as above described. Any remains of the funicular portion must be carefully removed. The scrotal portion can either be left—with or without occlusion by ligature—or removed separately. As this adds considerably to the length of the

operation, Newman usually leaves it, unless the sac is thin and easily separable, in which case it is stripped off early in the operation.

The gap in the lower abdominal wall at the site of the inguinal canal is closed by pulling the transversalis and internal oblique muscles down over the front of the cord and suturing them to the back of Poupart's ligament with two or three square or mattress sutures of stout silkworm gut, placed in order from the internal to the external ring and finally tied in this order. The outermost suture should obliterate the internal ring, and the innermost should close the external ring securely, without unduly constricting the spermatic vessels. Lastly, the cut margins of the external oblique aponeurosis are united by a continuous flax-thread suture. The skin wound is then sealed with a pad of aseptic gauze and a firm spica bandage applied.

18. Use of Iodin in Cholera.—Being encouraged by the effects of iodine in a few isolated cases of cholera, Brachio tried its effects more fully in an epidemic of rather a virulent type. The results were gratifying. He divided his experiments into three methods, namely: 1. A mixture consisting of tincture of iodine, 10 ml, dilute sulphuric acid 10 ml, tincture of digitalis 10 ml, water 1 ounce. One ounce for an adult every four hours. 2. A pill consisting of iodine, $\frac{1}{4}$ grain, extract gentian, q. s.; one pill for an adult three or four times a day. 3. An intraperitoneal injection, consisting of iodine, $\frac{1}{4}$ grain, potassium iodid, $\frac{1}{4}$ grain, distilled water, 20 ml. Twenty minims constituted one complete treatment for an adult. Having scrubbed a small portion of the skin of the abdomen just above the cecum with a piece of antiseptic wool, and painting the part with tincture of iodine, Brachio injected 20 drops of the solution with an all-glass hypodermic syringe and needle, by gripping and pulling up the abdominal wall as high as possible and driving the needle at right angles to the wall right down to the hilt and squirting its contents into the cavity.

Of all three methods the injection impressed him most favorably. In almost all the cases the treatment was supplemented with a free use of epinephrin by dropping the solution on the tongue, as it was quickly absorbed and nothing was lost in the event of vomiting. The iodine in either the mixture or injection form had a marvelous effect on the vomiting. In all the cases Brachio gave only one injection. He suggests that perhaps a second might have saved the lives of some who died, but unfortunately he was not able under the circumstances to give this as he had to move on to another village and was only able to come back to the last perhaps on the second or third day. One of the cholera doctors injected sixteen patients; of these ten recovered. Another reported having treated fifty-two patients, of whom forty-five recovered.

Lancet, London

September 5, II, No. 4749, pp. 637-682

- 23 Dysentery. F. M. Sandwith.
- 24 *Bullet Wounds in War. W. G. T. Posnett.
- 25 Some Signs and Symptoms of Hypothyroidism in School-Children. J. L. Dick.

24. Bullet Wounds in War.—From the cases quoted by Posnett it is seen that bullets may pass through the most vital tissues without doing any permanent injury. In the treatment of bullet wounds, Posnett says, it must be remembered that there often is great initial shock. The soldier frequently goes into battle in a hungry condition and is more or less tired by marching, and the receipt of a severe injury while in this state is accompanied by shock to the whole system. His mental state while engaged with the enemy also probably contributes its share. The impact of a bullet against the body is very severe. One patient who was struck through the right ilium told Posnett that he felt as if he "had been hit by a crowbar wielded by a giant," and that he had been thrown three or four yards out of the saddle.

An empty stomach is frequently the salvation of a wounded soldier who has been hit in the abdomen; a wound of the stomach or intestines seems to close rapidly without any trouble and so long as there has not been leakage of gastric

or intestinal contents the patient will probably recover in a short time, but if leakage takes place symptoms of localized peritonitis may be expected, which will require a laparotomy. Wounds of the bladder usually require a suprapubic cystotomy, as they do not heal readily and generally leak into the surrounding tissues. A clean wound of the kidney seldom requires any interference, but Posnett has had to remove a kidney for a wound which cut the ureter across about 2 inches below the renal pelvis. What may be called local shock is a condition sometimes encountered in wounds of the soft parts. The great velocity of the bullet seems to shake up the tissues for some little distance around the wound, with the result that there is a feeling of considerable stiffness in the part for several days, and nerves in the immediate neighborhood, although not touched by the bullet, may be the seat of more or less neuralgic pain for a considerable time. Tissues in this condition are not favorable for operative proceeding, as there is a tendency to delayed healing. It is better, if possible, to wait a few days for this local shock to pass off before proceeding to operation.

Revue Médicale de la Suisse Romande, Geneva

August, XXXIV, No. 8, pp. 501-560

26 *Mind-Blindness: Apraxia. Long.

27 *Mortality of Whooping-Cough. (Coqueluche.) A. D'Espine.

26. *Apraxia*.—Long reviews the history of the conception and the literature of this subject and reports in detail a case in a spinster of 66. There is both lack of proper apprehension of the true nature of things and inability to perform certain acts even when the motion is done before her eyes and she has only to imitate it. She has therefore both the soul-blindness and the motor apraxia. By a series of deductions and eliminations the lesion responsible for the trouble can be localized. Two years ago the patient developed symptoms suggesting foci of hemorrhage in the brain but there was no tendency to hemiplegia or hemi-anesthesia, hemianopsia or agnosia. Aphasia and apraxia were the only symptoms, and this testified to the comparatively trivial nature of the lesion and located it between the zone of Rolando and the occipital lobe.

27. *Whooping-Cough*.—D'Espine states that in 1913 there were 46 infants with whooping-cough in his service; most of them were bottle-babies and 9 were between 2 and 6 months old. Two succumbed to pneumonia already installed when the children were first brought to the clinic. Another died of tuberculosis and still another, enfeebled by chronic bowel trouble, died of general debility. The others all recovered; the mortality was thus 8.6 per cent. although, strictly speaking, the whooping-cough can scarcely be held responsible for any of the deaths in this series. The mortality from whooping-cough throughout Switzerland is comparatively high. Statistics for the decade ending in 1910 show the proportion of the general mortality to be 1.10 per cent. from whooping-cough; 1.05 from diphtheria; 0.91 from measles; 0.3 from typhoid and 0.27 per cent. from scarlet fever. The whooping-cough mortality has not declined in Switzerland in recent years while in England it has dropped to one-half the former figure, but it is still four times that of Switzerland. The statistics for other countries are compared with these. All testify that whooping-cough is a serious disease and that it runs a more serious course in institutions than in private homes. Children with whooping-cough should be kept at home and given outpatient care as needed. Another conclusion from the data presented is that open-air treatment should be the rule for whooping-cough, either in the home or hospital or in an open shelter. A third conclusion is that strict isolation is necessary: individual cubicles with special nurses until the diagnosis is certain, and then isolation in a special ward.

Archiv für klinische Chirurgie, Berlin

August, CV, No. 2, pp. 277-527. Last indexed Aug. 22, p. 711

28 *Puncture of the Corpus Callosum in Treatment of Epilepsy, Idiocy and Allied Conditions. (Weitere Erfahrungen mit dem Balkenstich.) A. Stieda.

- 29 *Resection of Thymus for Simple and Exophthalmic Goiter. (Thymusreduktion bei Basedow und Struma.) H. v. Haberer.
- 30 Radiotherapy. (Probleme der Therapie mit radioaktiven Substanzen.) Habs.
- 31 Exostosis on Heel or Elbow. (Spornbildung am Calcaneus und Olecranon.) F. Rolly and O. Appelt.
- 32 Origin of Free Bodies in the Knee. (Zur Kenntnis der Entstehung von freien Körpern im Kniegelenk.) A. Troell.
- 33 Pathology of the Shoulder after a Contusion. (Bedeutung des Akromiagelenks bei subcutanen Schulterverletzungen.) R. Sievers.
- 34 *Surgical Treatment of Pulmonary Tuberculosis by Resection of Ribs and Section of Phrenic and Intercostal Nerves. P. L. Friedrich.
- 35 *Operative Treatment of Traumatic Injury of Spine. (Zur Chirurgie der Verletzungen der Wirbelsäule und des Rückenmarks.) Borchard.
- 36 *Prophylaxis of Peritoneal Adhesions. (Neue Experimente zur Frage der Vermeidung peritonealer Adhäsionen.) E. E. Pribram.
- 37 *Operative Treatment of Internal Hydrocephalus by Diversion of Cerebrospinal Fluid into the Abdominal Cavity or Pleura. B. Heile.
- 38 Implantation of Nerve in Muscle. H. Heineke.
- 39 Practical Utility of Abderhalden's Serodiagnosis of Cancer. K. Fritsch.

28. *Puncture of the Corpus Callosum in Treatment of Epilepsy, Idiocy, etc.*—Stieda describes the experience at the Halle clinic with puncture of the corpus callosum which has been done nineteen times on seventeen patients. The effect realized was far from brilliant but the cases were all old inveterate ones. Done earlier, he is convinced that better results will be obtained, and that there is a future for this simple, brief and harmless operation which does not injure the brain nor entail shock and can readily be done under local anesthesia. The technic was that followed by A. von Bramann. (See THE JOURNAL, Jan. 14, 1911, p. 162.) When the dura was opened there was little or no pulsation evident in the brain, but after the puncture and release of a few c.c. of fluid pulsation returned, showing how conditions in regard to the circulation are favorably modified by it. Headache and dizziness subsided. In one case of puberty epilepsy the attacks became much milder after the corpus callosum had been punctured and then there was an interval of two years nearly entirely free from seizures. They then recurred in a mild form but were banished almost completely again for four years by a repetition of the puncture. In one case of epilepsy since childhood with hydrocephalus and imbecility, the seizures did not recur for several weeks after the puncture and since then they have been much less numerous and much milder. In another very severe case the seizures stopped abruptly for six months; they then returned, but were banished anew for a time by repeating the puncture. The little operation did no harm in any instance and more or less benefit was realized in all but two cases.

29. *Operations on the Thymus for Goiter*.—Haberer has resected the thymus in twenty-one cases, including eight cases of exophthalmic goiter, seven of ordinary goiter with unduly large thymus and a case of severe myasthenia. In all but two cases the thyroid was resected too. The postoperative improvement in the exophthalmic goiter cases was particularly striking and justifies reduction of the thymus whenever it is found unduly large at the operation on the thyroid. His experience has been that a combined partial operation on both the thyroid and the thymus gives better results than on either alone. The postoperative course is better when the thymus has been resected than when the thyroid alone is resected and the unduly large thyroid left undisturbed. Reduction of the thymus does not seem to entail any untoward consequences, even for the growing organism.

34. *Operative Treatment of Pulmonary Tuberculosis*.—Friedrich has applied various surgical measures in treatment in forty-five cases of pulmonary tuberculosis and describes his technic and the results, comparing them with the literature on the subject. He advocates operative treatment for all cases in which artificial pneumothorax is indicated but cannot be applied on account of adhesions or other reason. He resects the ribs from the rear, cutting close to the spine, and insists that the mobilization should include the wall over the entire lung on the side affected even if only one lobe is

involved, if operative treatment is attempted at all. He is rather skeptical as to benefit from compression of the lobe by a filling. Resection of the phrenic nerve entails a permanent mutilation which he thinks is unnecessary; the same therapeutic results can be obtained by merely crushing the nerve. This permits it to recuperate later. He has done this in eight cases but in six the diaphragm was already bound down with adhesions so that thus modifying its innervation had no effect on its excursions.

Resection of the intercostal nerves on animals produces effects analogous to those of exclusion of the phrenic nerve, the lung shriveling up thereafter. The same procedure was applied in a few cases of pulmonary tuberculosis, which he describes with illustrations. He pulled out all the intercostal nerves on that side, after blocking the nerve trunk, and found it a comparatively simple and easy procedure. In one case he extracted four nerves and resected five ribs. The results to date are encouraging. In conclusion Friedrich extols ample resection of ribs from the rear in one or more sittings as having won an important post in the campaign against extensive unilateral tuberculous disease.

35. Injuries of the Spine.—Borchard reports the successful reduction and complete cure of a forward dislocation of the first lumbar vertebra. Bladder and rectum were paralyzed and also the legs, and the knee-jerk was abolished, but the symptoms indicated that the spinal cord was suffering from pressure alone, and this was corrected by exposing and pulling the vertebra back into place. Roentgenoscopy showed that the bones were intact. He sutured together with wire the spinous processes of the first and second vertebrae after interposing a pedunculated flap of ligament and bone. Good results also followed surgical treatment in two other cases of injury of the lower spine, but in one it proved impossible to ward off cystitis, to which the patient succumbed. In this case a sliver of bone had pierced the dura causing merely paralysis of bladder and rectum. These experiences justify operations on the spine when there seems to be any chance to believe the spinal cord can be relieved thereby from injury from pressure or even from disturbance in the local circulation. The only absolute contra-indications are signs that the spinal cord has been injured entirely across. In his cases persistence of sensation to some extent in the legs testified that part of the spinal cord was still functioning. The longer the pressure lasts, naturally, the severer the injury.

36. Prophylaxis of Peritoneal Adhesions.—Pribram injected the vitreous body from the eyes of calves in his experiments on the peritoneum of rabbits, dogs and cats after introducing a small sponge into the abdominal cavity or irritating the serous membrane with a magnesium powder or tincture of iodine. When the abdomen was opened three weeks later the controls all had developed numerous adhesions. There was nothing of the kind in the animals whose abdominal content had been lubricated with the injected vitreous substance, except that close to the sponge were a few insignificant adhesions and adhesions had formed when the irritation had been exceptionally intense. The vitreous body can be easily sterilized and keeps for two or three days. The peristaltic movements distribute it throughout the intraperitoneal cavity and it coats the intestines as with thick slime, and causes no disturbances even on repeated injections.

37. Diversion of Fluid in Hydrocephalus.—Heile reports the case of an intelligent boy of 8 with internal hydrocephalus causing contracture and paralysis of the legs. Puncture of the corpus callosum and lumbar puncture induced great improvement but it was only transient. He therefore implanted a stretch of a vein to drain the lumbar dural cavity into the abdominal cavity. This worked finely for a time but then the vein collapsed and he implanted a rubber drain on the other side and this fully answers the purpose. The child's contractures have subsided and from being a helpless paralytic since his birth now, five months since the operation, he is learning to walk and can get about without help. The rubber tube is 5 mm. in diameter; it leads from the lower end of the spinal dural sac to the abdominal cavity

in the triangle of Petit, above the ilium, passing between the external and internal oblique muscles.

It is important in hydrocephalus to ascertain the point where there is the greatest accumulation of fluid. This proved in a case of external hydrocephalus to be in the fourth ventricle, and he diverted the excess of fluid into the intrapleural space by means of an implanted rubber tube. In order to reduce friction from the tube in the pleura he slipped over the lower end a segment taken from the living jugular vein nearby. The choked disk, headache and vertigo have entirely subsided. In both cases the tube healed in place without reaction. The benefit in the first case during the five months to date has surpassed, he says, anything yet realized in treatment of internal hydrocephalus. The technic in each case is shown with illustrations.

Berliner klinische Wochenschrift

August 3, LI, No. 31, pp. 1445-1492

- 40 *Myoma and Pregnancy. (Uterus myomatosus gravidus III mens.) L. and T. Landau.
- 41 Treatment of Tuberculosis According to Friedmann's Method; Twenty-Two Cases. C. Klieneberger.
- 42 *Salvarsan and Latent Microbism. C. Gutmann.
- 43 Epithelium-Proliferating Action of the Amino-Azobenzols. L. Martinotti.
- 44 Radium Treatment of Cancer. (Weitere Erfahrungen in der Radiumbestrahlungen maligner Geschwülste.) Weckowski.
- 45 Urobilinuria and the Diazo Reaction in Typhus and the Diplobacillus Exanthematicus. M. Rabinowitsch.
- August 10, No. 32, pp. 1493-1536
- 46 *Contracture Following Trauma of Distant Joint. (Reflexkontraktur steifgehaltener Gelenke.) A. Tietze.
- 47 *Friedmann's Treatment of Tuberculosis. M. Wolff.
- 48 *Helminths and Appendicitis. (Sind die Würmer, besonders die Oxyuren, direkt oder indirekt schuld an der Appendicitis?) L. Aschoff.
- 49 Gunshot Wound of Spleen Patched with Omentum. (Milzschuss, durch freie Netztransplantation geheilt.) R. Mühsam.
- 50 Sterilization of the Hands. Huntemüller and B. Eckard.
- 51 *Histology of Carcinoma after Radiotherapy. F. Heimann.
- 52 Technic for Radiography of the Appendix. A. Henzelmann.
- 53 *Relation of Atypical Gout to Asthma and Pulmonary Tuberculosis. A. Mayer.
- 54 Humberg "Second Sight." (Die "Hellseher," ihre Tricks und ihre Opfer.) R. Meyer.

August 17, No. 33, pp. 1537-1568

- 55 *Fatal Case of Bovine Tuberculosis in Man. H. Beitzke.
- 56 Unfavorable Experiences with Friedmann's Treatment of Lupus; Seven Cases. Starke.
- 57 Combination Salvarsan-Mercury Treatment of Syphilis. W. Scholtz.
- 58 Importance of the Recess Shadow in Roentgenoscopy of the Stomach. (Diagnostische Bedeutung des Nischensymptoms bei der radiologischen Magenbetrachtung.) Strauss.
- 59 *Early Differentiation of Gastric Ulcer and Cancer. (Zur Diagnose der beginnenden sekretorischen Insuffizienz des Magens.) M. Ehrenreich.
- 60 Postdiphtheric Polyneuritis in Physician, with Pains, Ataxia and Paralysis; Unable to Practice for Nine Months. P. Friedlaender.
- 61 Age of Human Embryos in Connection with Last Menstruation. H. Triepel.

August 24, No. 34, pp. 1569-1588

- 62 *Practical Suggestions for Battle-Field Surgery. (Praktische Winke für die Chirurgie im Felde.) Franz.
- 63 Torsion of Omentum Including Loop of Intestine. (Netztorsion.) K. Fritsch.
- 64 Antiperistalsis as Result of Adhesions. (Rückfluss und röntgenologische Antiperistaltik des Duodenums als Folge von Adhäsionen.) Ehrmann.
- 65 Distribution and Elimination of Radio-Active Substances. (Verteilung und Ausscheidung radio-aktiver Substanzen.) J. Plesch.
- 66 Action on the Lungs of Thyroid Extract. (Beeinflussung der Lungen durch Schilddrüsenstoffe.) B. Zondek and W. Frank-further.

40. Myoma and Pregnancy.—Landau thinks that physicians as a rule are too apt to regard myomas in the uterus as of comparatively little moment. In a case reported in detail a physician consulted by a young woman contemplating matrimony advised her that the uterus was in such a myomatous condition that pregnancy was out of the question and she would have to tell her fiancé this, but otherwise she need not worry. This idea that pregnancy is impossible in an extremely myomatous uterus and that the sterile are inclined to myomas must be abandoned. On the other hand, the numerous apparently normal deliveries with myomas and

the cases of successful enucleation of myomas during or after delivery show that the complication of a pregnancy with myomas is not very much to be dreaded. In the present case the woman became pregnant immediately after her marriage and the myomatous uterus was amputated at the third month. It weighed nearly 12 pounds. Landau adds that all recovered of his fifty-one patients requiring operative treatment of a myomatous pregnant uterus, and that the mortality in his total 544 cases of uterine myoma was 1.8 per cent.

42. Casual Infection Enhances Toxic Action of Salvarsan.—Gennerich and others have called attention to the necessity for refraining from giving salvarsan if the patient is suffering from a febrile infectious process anywhere or has just recovered from such infection and bacterial toxins are still circulating in his blood. Gutmann emphasizes the necessity for caution in this respect, especially since Yakymoff has found that mice given an intravenous injection of minute amounts of the endotoxin of the colon bacillus and then treated with salvarsan showed that the toxicity of the salvarsan had been enhanced nearly threefold by the preliminary treatment. The toxicity was enhanced eightfold when the mice had been mildly infected with trypanosomes, while stronger infection with trypanosomes enhanced the toxicity fifteenfold. The toxicity was most pronounced when the trypanosomes were still circulating in the blood. These experiences warn decidedly against injecting salvarsan unless several days have elapsed after a febrile infectious process. Gutmann warns that trouble may be anticipated if the salvarsan is injected during the incubation phase of an infectious process or during a stage of latent microbism as he calls it. Only by careful determination of the fact that the patient is free from bacterial infection, latent or otherwise, can we be certain to avoid danger from this superposed toxic action and influences. If a febrile acute infection develops during a course of salvarsan treatment, he advises to wait at least a week or two before going on with the salvarsan. When the salvarsan is resumed, he insists on the necessity for commencing treatment anew with a very small tentative dose to test the patient's susceptibility before going on with the course. He describes four cases in which there was unsuspected latent microbism when the salvarsan treatment was commenced, follicular tonsillitis developing after a day or so or ovarian trouble flaring up, and in each case the salvarsan was followed by a serious general reaction, chills, fever, headache, somnolency, etc. Suspending the salvarsan until the infectious storm had blown over, it was then resumed without further disturbance.

46. Reflex Contracture of the Fingers from Distant Traumatic Joint Disease.—Tietze gives a number of illustrations of the contracture he describes, saying that as it is impossible to bend the fingers intentionally in this way, the bending must be a reflex process from the joint trouble. He explains it as the result of efforts to spare the painful joint, as he has witnessed these contractures develop during acute articular rheumatism and during an attack of gout as well as with chronic arthritis and joint disease from severe trauma.

47. Friedmann's Treatment of Tuberculosis.—Wolff reports discouraging experiences with Friedmann's remedy, which he applied in 60 cases of pulmonary tuberculosis. Among 47 patients weighed at intervals, 28 lost weight, some losing from 8 to 22 pounds during the course of treatment. Seven of the patients have died since. He gives the details in regard to the symptoms and Roentgen findings in 26 cases before and for several months after treatment and reviews his extensive experimental work with the Friedmann remedy, saying in conclusion that the experiences of the last thirty years in the treatment of pulmonary tuberculosis have all proved so disappointing that he thinks the victims of tuberculosis should be left in peace now and not have their hopes being constantly aroused with new remedies, only to be dashed down again with most disastrous consequences for the patients.

48. Helminths and Appendicitis.—Aschoff does not believe the oxyuris is directly responsible for true appendicitis, but he thinks it can induce conditions which simulate appendicitis.

This false appendicitis, however, can be cured by expelling the helminths, and consequently he urges that more attention should be paid to worms, especially in children, as expulsion of the helminths will ward off attacks of false appendicitis and thus protect against unnecessary appendicectomy. When the supposed appendicitis is merely trouble from helminths, removal of the appendix does not prevent recurrence of the false appendicitis attacks.

51. Histologic Findings in Cancers after Radiotherapy.—Heimann gives the microscopic findings in five cases in which the cancer had been excised after vigorous radiotherapy had been applied. The microscope revealed, he says, actually phenomenal modification of the cancer cells, and to a depth of 3 cm. The cancer cells beyond this point were not affected, but in four of the cases the cancer did not extend to the depth of 3 cm. and all the cancer cells seemed to have been destroyed.

53. Atypical Gout in Connection with Asthma and Pulmonary Tuberculosis.—Mayer thinks that the only reliable signs of gout outside of the paroxysmal attacks are the output of uric acid, both the natural output and the output after intravenous injection of 0.5 gm. uric acid. The healthy eliminate nearly all this amount of uric acid in the following two days, but patients with deranged metabolism of purin retain a large proportion of it. He applied this test to forty patients with chronic bronchitis and asthma and found that nine showed the characteristic retention of the uric acid typical of gout. In nearly every one of these cases there was a family history of gout and diabetes and the children showed the exudative diathesis, confirming Strümpell's assertion that true asthma is one manifestation of the exudative diathesis. The asthma in these cases was a constant asthmatic condition with occasional exacerbations and the latter were brought on by the same kind of injurious influences which are liable to bring on the attack of true gout. The curve of the output of uric acid during the exacerbation resembled in every respect that of the typical attack of gout. Treatment of the asthma as for gout alone had a decided beneficial effect.

He found the behavior of uric acid typical of gout also in some tuberculous patients. Several of the patients had been subject to attacks of gout before their tuberculosis developed and in all the gout became attenuated thereafter. The tuberculosis seems to be unusually mild in persons with a tendency to gout. Three of Mayer's patients were of the gouty type and had a mild tuberculous pulmonary affection displaying a marked tendency toward healing, but they were subject to recurring hemorrhages from the lungs. The hemorrhage could be brought on without fail by injecting a minimal dose of tuberculin. Tuberculin induces considerable leukocytosis and thereby an increase in uric acid. When this increase was superposed on an already abnormally high proportion of uric acid, as the total reached its highest point, hemorrhage in the lungs occurred. During the hemorrhage the curve of the output of uric acid was exactly like that of a typical attack of gout. That the tuberculin was not responsible for the hemorrhage is evident from the fact that there were no signs of a tuberculin reaction. The temperature persisted normal throughout.

The experiences related suggest that treatment as for gout alone may prove useful for both asthma and tuberculous hemoptysis in cases such as the above.

55. Fatal Case of Bovine Tuberculosis in Boy of 14.—Beitzke states that the case reported showed the severest pathologic anatomic findings of generalized tuberculosis that he has encountered in his fourteen years of necropsy work at Lausanne. The cadaver was that of a lad of 14 who was taken sick with pain below the diaphragm, vomiting, emaciation and diarrhea. By the fourth month he began to cough, ascites developed, and he died six months after the first signs of anything wrong. Necropsy revealed generalized tuberculosis of exceptional severity and extent, evidently starting in the abdomen. Inoculation of animals confirmed the bacteriologic findings of bovine tubercle bacilli. The eight other children and the parents were healthy and it was learned that

this boy used to spend much time at a neighboring farm and drank a glass or two of milk at the milkings, and some of the cows here discharged tubercle bacilli in their milk. Beitzke adds that the proportion of fatal cases of bovine tuberculosis in man is even larger than with tuberculosis from human tubercle bacilli. He has compiled 126 cases of bovine tuberculosis in accessible literature in addition to Weber's 138 cases. He remarks that the case here reported is the first instance to be published in which the bovine tubercle bacilli were actually cultivated from the milk of the cows in question.

59. Diagnosis of Commencing Insufficiency of Gastric Secretion.—Ehrenreich expresses surprise that so little attention has been paid to the significant change in the secretory functioning of the stomach in the direction of stimulation or paralysis. Irritation stimulating to excessive functioning or paralysis preventing functioning are the opposite poles corresponding to benign and malignant stomach affections. Determination of conditions in these respects is of far greater diagnostic import than the amount of free hydrochloric acid in the stomach content. He has found that the acidity of the residue in the fasting stomach, compared with the acidity after the test-breakfast, gives a proportion altogether different with simple ulcerative and cancerous conditions. In the benign affections the acidity was higher or at least as high as in the fasting residue while the reverse was constantly the case with cancer. The findings in six gastric or duodenal ulcer cases showed acidity from 0 to 56 and after the test-breakfast from 16 to 80, the increase ranging from 12 to 43. In six cancer cases the acidity in the fasting content was 0 in two cases and from 16 to 82 in the others. After the test-breakfast it was 0 in four cases and had dropped from 82 to 72 in another. In four other cases the findings were equally conclusive and an operation confirmed the presumptive diagnosis.

With cancer there is a residue retained in the fasting stomach and it acts as a constant irritant to induce secretion. If the stomach is then pumped clean and the test-breakfast taken, the secretory apparatus is fatigued by the preceding irritation. If there is any tendency to insufficient secretory functioning it at once becomes manifest by the inadequate response to the stimulus from the test-breakfast. With ulcer, on the other hand, the tendency is to excessive secretion, and the stomach responds to the second stimulus with considerable secretion. The principle of the test is thus to supervise the secretory behavior of the stomach after it has been whipped up by two stimuli applied in turn. The findings seem to be more reliable when the total amount of the test-breakfast equals the total amount of residue content—bulk apparently influencing the response to a certain extent. The method is applicable only in cases with considerable retention.

62. Surgery on the Battle-Field.—Franz describes the different projectiles in use in the different armies now in the field and gives a number of practical suggestions when a battle is impending. Among them he mentions the necessity for lubricating the syringe with ointment, and having one syringe for morphin and one for camphorated oil, carrying a bottle of each, the morphin in a 3 per cent. solution.

Correspondenz-Blatt für Schweizer Aerzte, Basel

August 1, XLIV, No. 31, pp. 961-992

67 *Operative Treatment of Extreme Rachitic Curvature of Long Bones. (L'osteosynthese de Lambotte dans le traitement des déviations rachitiques.) A. Machard.

68 The Physical and Biologic Bases of Radiotherapy. (Strahlentherapie.) H. E. Walther. Commenced in No. 30.

August 8, No. 32, pp. 993-1024

69 Functional Importance of the Musculature of the Arteries. W. R. Hess.

August 22, No. 34, pp. 1057-1088

70 *Pathology of the Liver and Tests of Functional Capacity. O. Steiger. Commenced in No. 33.

71 Gummatous Ulceration in Vulva and Vagina. K. Bollag.

67. Treatment of Rachitic Curvature.—Machard has been much pleased with his success in straightening rachitic long bones by means of Lambotte's method of extension and screw-

ing the bones to a metal plate. No foreign body is left permanently in the tissues. One assistant is necessary, but all the handling is done with instruments. When the dry cotton gloves come through the whole procedure still dry and without a trace of blood, this guarantees that there has been no direct contact with the tissues. Correction of the deformity may require correction of rotation and preventing overriding from traction by muscles, as well as the lengthwise straightening of the bone. As the bones of children between 3 and 7 are so weak, he makes the screws, clutch and plate of aluminum, the whole weighing less than 100 gm. In his twelve cases the children began to use the limb the second day after the operation and the fixation plate was discarded by the eighteenth to the twenty-six day. The right femur was thus lengthened by 6½ cm. and the left by 5½ in one child of 6, and in a child of 5 the leg below the knee was made 7 cm. longer. Both these children now walk without support while before neither could even stand alone. He never witnessed any tardy by-effects, and the healing seems to leave more natural conditions than when a plaster cast is applied. The plate also corrects rotation, he says, and maintains the corrected position after the osteotomy better than any other technic. Consolidation is prompt and the scar left in the bone is minimal. The procedure should of course be reserved for the more serious cases as even at the best it requires a long incision for the osteotomy, and the four screws are foreign bodies liable to set up infection. There was suppuration in one screw-hole in one of his cases; all the others healed without complications.

70. Functional Tests in Liver Disease.—In this communication from Eichhorst's service at Zurich, Steiger compares the findings with a number of tests of the functional capacity of the liver. By applying several tests it is possible to obtain very good oversight of conditions in the liver as he shows by tabulation of the findings in fourteen typical cases of various stomach, pulmonary or liver affections. The findings with catarrhal jaundice and cirrhosis of the liver were more characteristic than we can obtain with any functional tests applied to the spleen or pancreas or even in certain forms of kidney disease. Insufficiency on the part of the liver is demonstrated, he affirms, when alimentary galactosuria coincides with alimentary levulosuria (determining also the sugar content in the blood-serum), and there is also a positive reaction to the camphor-glycuronic acid test; an abnormally low fibrinogen content in the serum, and pathologic urobilinuria.

The research reported apparently demonstrates that the amino-acid output alone is the only really instructive method among the chemical tests, but the technic for this and the camphor-glycuronic acid test of the capacity of the liver for synthesis are too complicated for general use.

On the other hand, the determination of pathologic urobilin in the urine is comparatively simple and within the reach of all. It indicates absolute insufficiency on the part of the liver unless there is an abnormal production of urobilin in the intestines from pathologic destruction of blood.

The carbohydrate tests with 100 gm. levulose or 40 gm. galactose permit finer differentiation if one is not content with merely noting the presence of the sugar in the urine but repeats the tests with varying amounts until the exact degree of tolerance for each is ascertained. Hohlweg has found that the tolerance of the liver for levulose is reduced in direct proportion to the extent to which the parenchyma is damaged. He gives 50, 75 or 100 gm. of levulose in 300 c.c. of milk, fasting, and examines the urine every two hours thereafter for six hours. Three days later he repeats the test with a smaller amount of levulose. Determination of the sugar in the blood-serum instructively supplements the levulose test.

Alimentary galactosuria is not pronounced with disturbance in the liver from cholelithiasis or simple congestion. With cirrhosis of the liver or cancer there is merely moderate galactosuria, but with catarrhal icterus the galactosuria is always extremely pronounced. The patient takes 40 gm. fasting and the urine is collected in two six-hour periods. It is tested for galactose by the Trommer or Nylander technic and polarimetric examination.

The discovery that the liver controls the fibrinogen content in the blood has given us another test for the functional capacity of this organ. The normal content in the blood is about 0.3 or 0.4 per cent., but it falls to 0.05 per cent. with cirrhosis of the liver or catarrhal jaundice. It is readily estimated, Steiger adds, by weighing the blood-clot after addition of calcium chlorid, or by heating the plasma to 59 C. for twenty minutes.

Deutsche medizinische Wochenschrift, Berlin

August 6, XL, No. 32, pp. 1601-1648

- 72 *Threatening Conditions in Acute Heart Disease. (Behandlung der bedrohlichen Zustände bei der akuten Endo-, Myo- und Pericarditis.) Grober.
- 73 *Cystic Tumors in the Suprasternal Fossa. (Zystische Geschwülste im Jugulum.) Riedel.
- 74 *Disappearance of Typhus, Relapsing Fever and Plague from Civilized Countries. (Das Aussterben der "Krankheiten der Unkultur.") K. Kisskalt.
- 75 *The Coagulo-Reaction in Syphilis. (Eine Gerinnungsreaktion bei Lues.) L. Hirschfeld and R. Klinger.
- 76 *Operation to Restore Tibia. (Operationen zur Deckung grösserer Tibiadeфекte.) H. Andree.
- 77 Operative Treatment of Hour-Glass Stomach. (Sanduhrmagen.) A. Pers.
- 78 *Protective Ferments against Maize-Albumin in Serum of Pellagrins. (Schutzfermente gegen das Maisweiss—Zeine—im Blute der Pellagrosen.) J. J. Nitzescu.
- 79 *Boas' Phenolphthalein Test for Occult Blood. H. Schirokauer and I. Boas.
- 80 Inefficacy to Date of All Mechanical Devices to Cure Impotency. (Bemerkungen über mechanische Mittel zur Behebung der Impotenz.) G. Flatau.
- 81 Standardization of Graduated Syringes. (Eichung medizinischer Spritzen.) W. Roerdanz.
- 82 The Organization of the French Service for Care of the Wounded. (Die französische Kriegskrankenpflege.) Adam.
- August 13, No. 33, pp. 1649-1664
- 83 Angina Pectoris. Grober.
- 84 Radiotherapy of Cancer. (Ergebnisse der Strahlenbehandlung der Karzinome.) O. Küstner and F. Heimann.
- 85 Hypophysis Extract in Treatment of Amenorrhea. E. Kosminski.
- 86 Venereal Disease in the Troops Now in the Field. (Venerische Krankheiten bei den im Felde stehenden Truppen.) A. Neisser.
- August 20, No. 34, pp. 1665-1680
- 87 Treatment of Threatening Conditions in Acute Leukemia, Pseudo-leukemia and Hemorrhagic Diatheses. Grober.
- 88 Tuberculosis of the Thyroid. Permanent Cure for Twenty-Two Years to Date after Operation on Tuberculous Thyroid. (Kropf-tuberkulose.) Riedel.
- 89 Blood-Platelet Preparation to Arrest Bleeding. (Coagulen Kocher-Fonio.) E. Juliusburger and T. v. Mutschenbacher.
- 90 Operation for Embolism. (Beitrag zur Gefässchirurgie.) L. Dreyer.
- 91 *Phenolphthalein Test for Occult Blood in the Stools. A. Schneider and v. Teubern.

72. **Acute Heart Disease.**—Grober emphasizes the importance of the salicylates in acute endocarditis, myocarditis or pericarditis even when there is nothing to indicate articular rheumatism. Among other measures, cold applications to the heart not only give subjective relief but are useful in keeping the patient still. This is of extreme importance, and the psychic treatment to tranquilize and impress on the patient the necessity for keeping still is a vital factor in the cure. Effusion in the pericardium is frequently accompanied by an effusion in the pleura, and when the latter was tapped the effusion in the pericardium was spontaneously absorbed in some of his cases. He gives an illustration of the technic for puncture of the pericardium. When done gently there need be no fear of perforating the ventricle wall.

73. **Cystic Tumors in Suprasternal Fossa.**—In the case reported by Riedel a cystic tumor was removed from a woman of 77, supposed to be a cystic goiter or dermoid cyst, but the microscope showed tuberculosis. There can be no doubt that it was secondary to an isolated tuberculous process in the thymus. A second operation was necessary five weeks later but both were restricted to clearing out the focus and draining and a complete cure was soon realized. Riedel states that cystic goiter was evident in 148 of his 1,070 operations for goiter at Jena. The cyst generally starts in a side lobe. Dermoid cysts in this region are also comparatively frequent but the above case of tuberculosis was the only one of the kind he has encountered. It was remarkable further in the acute development of the cystic process; it first manifested itself only three weeks before it compelled the operation.

74. **The Disappearance of Typhus, Relapsing Fever and Plague.**—Kisskalt remarks that the recent discovery that typhus and relapsing fever are transmitted mainly if not exclusively by the louse readily explains their vanishing from a country as habits of cleanliness exterminate vermin. This also has cooperated in the disappearance of bubonic plague, as fleas and rats have been brought under some control. Another important factor may be the fact that the black rats have been driven out of western Europe in the last century or so by the brown rats which are not so tame as the black house rat. There is a disease among rats in Europe which causes chronic lesions almost identical with those of plague in rats. It is caused by the *Bacillus pseudotuberculosis rodentium*, and this resembles the plague bacillus so closely that there is much to sustain the assumption that this is the degenerated descendant of the original bacillus of virulent rat plague in former centuries, modified by countless passages through rats.

75. **Coagulation Test for Syphilis.**—Practically the same article was summarized in these columns quite recently, page 1060. Hirschfeld and Klinger have examined to date the serum of 250 persons for the coaguloreaction. The findings paralleled those of the Wassermann test as closely as the range of positive reactions with the latter test with different extracts. The coaguloreaction is the first method—outside of the immunity research technics—which reveals a specific change in the condition of the blood, and it is the only one yet advanced, they say, based on the physiology of coagulation. Syphilitic serum inhibits coagulation with their technic. A color reaction can be obtained by tinting the fluid with a suspension of a stain and then shaking the fluid; the particles of the stain get caught in the fibrin and the fluid becomes decolorized.

76. **To Remedy Defects in the Tibia.**—Andree comments on the necessity for saving all the epiphysis zones to insure further growth. There are four in the normal tibia and fibula together, but when the upper or lower on one of these bones is lost, approximately normal conditions for growth can be secured by slitting the other bone in the center and implanting the slit-off part in the marrow of the bone with the large defect. The slit bone then forms a Y or a reversed Y. This secures three epiphysis zones. The conditions for further growth are thus good from the start, and the bones soon grow strong and in normal proportions. This method of transplanting a slit-off branch of the adjacent fibula, holding it in place with a pedunculated periosteum-bone flap, is so simple that no special skill is required, while the results were most excellent in the case reported. There is no shortening of the leg although the lower half of the tibia had been entirely destroyed. The patient was a girl of 12 and the operation was done a year after an osteomyelitic process had destroyed the entire lower half of the tibia. The weight-bearing on the foot is also normal with this technic. Six illustrations accompany the article.

78. **Serodiagnosis of Pellagra.**—Nitzescu writes from Bucharest to call attention to the possibility of early serodiagnosis of pellagra by the presence of protective ferments against maize albumin—zeinolytic ferments. The maize albumin or zein seems to have a toxic action, and the ferments formed to combat this linger in the blood long after other symptoms have disappeared when maize is dropped from the diet. In a recent case a patient with merely nervous manifestations was shown by the serodiagnostic test to be suffering from otherwise latent pellagra, and later other characteristic symptoms developed. The response was particularly pronounced in eight cases with predominant gastrointestinal disturbances. The reaction was negative in the fifty-eight cases only in two pellagrins who had been in the hospital for over two years and had eaten no maize during this time and had no symptoms left except slight mental confusion at times. The zein was extracted according to Osborne's directions and the Abderhalden ninhydrin technic was followed otherwise.

79-91. **The Phenolphthalein Test for Occult Blood in the Stools.**—Boas replies to Schirokauer that the possible sources

of error he suggests are purely theoretical. They have no practical importance unless it can be demonstrated that the findings are positive in a normal person who has eaten no fish or meat for several days beforehand. This he has been unable to show. Schneider and von Teubern write from the university polyclinic at Bonn, in charge of Professor Krause, that the findings were constantly accurate in sixty cases tested, including tests on themselves after several days of exclusively milk-vegetable diet. The test proved more delicate than the Weber or aloin tests, and is a convenient and reliable method for determining the presence of invisible blood in the stools. (One of Boas' latest communications on the subject was reviewed in THE JOURNAL, March 29, p. 1035.)

Therapeutische Monatshefte, Berlin

August, XXVIII, No. 8, pp. 449-608

- 92 *Treatment of Pleurisy, Emphysema and Atelectasia. (Therapie der Krankheiten der Respirationsorgane.) L. Hofbauer.
- 93 *Treatment of Leukemia. B. Hahn.
- 94 Favorable Influence of Salvarsan in Case of Advanced Tabes. H. Becher and R. Koch.
- 95 Friedmann's Treatment of Tuberculosis; Nineteen Cases. H. Becher and H. Waegeler.
- 96 *Injection of Alcohol to Cure Prolapse of the Rectum. (Mastdarmvorfall.) Roux.
- 97 *Roentgen Treatment of Keratitis from Acne Rosacea. L. Pick.

92. Treatment of Pleurisy and Emphysema.—Hofbauer remarks that if operative measures are not required in pleurisy, the tendency to effusion should be checked with calcium lactate or other salt, absorption promoted with salicylates, superheated air and the "Karell cure," supplemented by appropriate breathing exercises. Hofbauer emphasizes the value of the latter in particular, confirming the importance of respiratory movements in promoting absorption of fluid in the pleura. The Roentgen rays have shown that when reclining on one side, the half of the diaphragm on the under side is drawn high up and makes exceptionally extensive excursions, while the half of the diaphragm on the uppermost side makes exceptionally small excursions. This renders it easy to induce maximal active respiration on one side with minimal on the other, and thus promote absorption to the utmost while sparing the rest of the pleura. To accomplish this the patient must recline on the side affected and practice abdominal breathing; the earlier this is done the better. Sometimes the absorption may proceed so rapidly under this that the temperature runs up. This can be guarded against by having the patient recline and exercise in this way only a short while at a time, and gradually, by a sort of immunizing process, there soon comes to be no further febrile reaction. The procedure is a form of autoserotherapy, and it aids also in preventing development of adhesions and cicatricial bands, and it tones up the diaphragm.

In treatment of emphysema the main point is to train the lungs to empty themselves more effectually. Breathing exclusively through the nose, with long tranquil expiration, the auxiliary muscles of expiration become trained to work better, and he has devised an apparatus which exerts intermittent pressure on the abdomen just as the natural expiration process stops. The apparatus by compressing the abdomen prolongs the expiration, and the patient soon learns to imitate this and thus force up the diaphragm in this way naturally by utilizing the hitherto neglected forces of the abdominal musculature. Patients with emphysema are permanently relieved in this way; the signs of cardiac insufficiency subside and the circulation in general is improved. He calls this method of treatment *Summtherapie*, as the patient makes a humming noise during expiration coincident with the signal of the apparatus, either a light or buzzer working during expiration.

93. Leukemia.—Hahn remarks that while the last few years have given us a few more weapons to fight leukemia, yet its cause is as much of a mystery as ever. A vigorous course of treatment is not indicated as a rule unless there is progressing anemia, distressing leukemia tumors, or the whites are increasing beyond measure. The reason for holding back with energetic treatment is on account of the acute,

almost explosive, aggravation of the condition which has occurred in many cases when all seemed to be going exceptionally well under treatment. The relapse then may prove far worse than the original trouble for which the treatment was started.

The Roentgen rays seem to check the growth of the hyperplastic white-corpuse-producing tissues, but overdosage may prove fatal, and too small doses may actually overstimulate these tissues: In Decastello's case of chronic myelosis the whites dropped after three mild exposures from 720,000 to 400 with 0.9 per cent. neutrophils and the patient died from hemorrhages. Schwarz has reported disastrous results from stimulation of functioning by minute doses. In this group belong the cases of leukemia developing in professional roentgenologists; Heinecke has recently compiled six cases of this kind. Hahn advises systematic exposure of every accessible gland in the lymphatic form, but with myelogenous leukemia exposure of the enlarged spleen alone answers the purpose. In rebellious cases and recurrences he has witnessed benefit from exposing the long bones of the legs between the series of other exposures. He noted a marked improvement in the symptoms and general health in 75 per cent. of his cases, while the others were not influenced (6 in 23 cases). Bécère has reported no failure in his 12 lymphatic and 93 myelogenous cases. Radio-active substances fail in about 20 per cent. of the cases, according to the literature to date. The action and effect seem to be about the same as with the Roentgen rays; the lymphatic form seems to be less amenable to the Roentgen-ray reaction and recurrence is inevitable.

Benzol is commended by some and denounced by others. It certainly should not be given with disease of the liver or kidneys, or with catarrhal intestinal trouble, and it should be suspended when the leukocytes have dropped to 20,000 or 25,000, before they have got down to normal figures. Hahn's experience suggests the advantage of changing from one method of treatment to another; one seems to pave the way for a better utilization of another, while both can be applied with lesser dosage, possibly commencing with the Roentgen rays and continuing with benzol, not giving above 1 gm. a day of the latter. If myeloblasts appear in large numbers under Roentgen treatment he changes to thorium X and follows with a vigorous course of arsenic. When to start treatment again with recurrence is still a question. It is his practice to keep up the Roentgen exposures after subsidence of symptoms, giving every week or two a fraction of an erythem dose, and lately has been giving occasionally 0.5 or 1 gm. of benzol a day, carefully supervising the liver and kidney functioning, and resorting to vigorous measures at the first signs of any flaring up of the process. With leukemia, myelosis and lymphadenosis it is better to hold back from vigorous measures on account of the danger of exacerbation unless one's hand is forced; then arsenic should be given a trial first. With acute leukemia all treatment seems to be hopeless, but as it is not always possible to differentiate the acute form, thorium X plus a vigorous course of arsenic should be tried.

96. Treatment of Prolapse of the Rectum.—Roux advocates anew his method of treating prolapse, the advantages of its simple technic having been amply proved during the eight or ten years since he began to apply it. He injects alcohol into the connective tissue around the rectum, outside the intestinal wall. Under general anesthesia the needle is inserted back of the rectum, on the median line, and alcohol is deposited here and on each side, between the rectum and coccyx and sacrum. The needle is then introduced again on each side farther around, but the pouch of Douglas is respected. He has thus injected from 2 to 4 or 6 c.c. of alcohol in children, with no untoward results, not even when up to 10 c.c. was injected. A roll of gauze, smeared with petrolatum is placed between the buttocks and brought up entirely around the abdomen holding the rectum firmly in place. This is left for three to eight days or more. Esthetic considerations here are the only drawback to this technic. Adults can be kept constipated for this period, but defecation has to be permitted to children.

97. **Treatment of Keratitis Secondary to Acne.**—Pick calls attention to the excellent effects he has realized in eight cases of this most tenacious affection with Roentgen treatment applied to both the eye and the acne rosacea on the face. His youngest patient was 28 and the oldest 70; the younger the patient the more readily the eye becomes involved while the older the patient the more rebellious to therapeutic measures. He applied the Roentgen rays at four- to eight-day intervals each to a mild erythem dose and found that under from four to six exposures even severe and necrotic cases subsided to a complete cure. He never witnessed anything suggesting injury to the eye from these doses, and no other measures were necessary except rinsing with a tepid mild disinfectant and smearing the lids with a 20 per cent. zinc-petrolatum salve. Other physicians who have tried it also confirm the certain and prompt recovery under roentgenotherapy, and the abortion of incipient recurrence.

Wiener klinische Wochenschrift, Vienna

August 20, XXVII, No. 34, pp. 1227-1242

- 98 *Operation on Side Wall of Nose through Window in Septum. (Perseptale Operationen an der lateralen Nasenwand.) K. Kofler.
99 The War and Tuberculosis. (Krieg und Tuberkulose.) J. Kollarits.

98. **Perseptal Operations on Walls of Nose.**—Kofler has been impressed with the advantages of working on the interior of the nose and lacrimal sac through a temporary window cut in the septum. He has been applying this technic for a year and a half and here reports eight cases with seven illustrations of the exact technic. In most of the cases the septum was deformed and required correction, but even when this was not the case, the benefit from direct inspection and facility of access confirmed the advantages of this technic. One patient had had rebellious suppuration in the lacrimal sac for a number of months; the others had a suppurative process in the antrum of Highmore on one or both sides, dragging along for years until promptly cured by the thorough operation possible by the perseptal technic.

Zentralblatt für Chirurgie, Leipsic

August 22, XLI, No. 34, pp. 1385-1408

- 100 Adhesive Plaster Dressing for Harelip Operations. (Zur Frage des Heftpflasterverbandes bei Hasenschartenoperationen.) C. Helbing and H. Matti.
101 Wire Extension from the Heel. (Die Drahtextension am Calcaneus.) E. Gelinsky.

Zentralblatt für Gynäkologie, Leipsic

August 22, XXXVIII, No. 34, pp. 1185-1200

- 102 Preparation of Blood-Plaques to Arrest Hemorrhage in Gynecology. (Anwendung des Koagulen Kocher-Fonio in der Gynäkologie.) H. Albrecht.
103 Rubber Mittens for Management of Normal Delivery. (Der Gummifaustling zur Leitung der Spontangeburt.) E. Meyer.

Gazzetta degli Ospedali e delle Cliniche, Milan

August 13, XXXV, No. 97, pp. 1017-1024

- 104 *Unusual Complications of Typhoid in Two Children. A. Melchiorri.
August 20, No. 100, pp. 1049-1056
105 *Recrudescence of Tuberculosis Under Influence of Intercurrent Disease or Trauma. (Studio delle tubercolosi terminali.) V. Bellizzi.

104. **Typhoid Fever in Children.**—In the two cases described pains and edema in the scrotum were accompanied by bilateral radial paralysis in one case and total aphasia, complete by the fourth day. In both there was pronounced hypotonus at first, soon yielding to hypertonus. One of the children became extraordinarily emaciated and developed decubitus. Both recovered but they were in the hospital three and four months.

105. **Terminal Tuberculosis.**—Bellizzi applies this term to cases in which tuberculosis developed and ran a fulminating course as the vital processes were depressed from some other cause. The first patient was a syphilitic woman of 55, with cirrhosis of the liver, who died a few days after developing symptoms on the part of the heart and lungs, without fever. Necropsy revealed confluent miliary tuberculosis, evidently

quite recent and primary. In the other case a young woman died of fulminating miliary tuberculosis and necropsy showed that the trouble was the flaring up of old latent tubercles. The tubercle bacilli had evidently been long walled in but when something happened to lower the vitality the bacilli made their way out and set up new speedily fatal processes.

Pediatria, Naples

July, XXII, No. 7, pp. 481-560

- 106 *Luetin Reaction in Inherited Syphilis. S. Cannata.
107 *Influence of Fat on Gastric Digestion of Milk. S. Riva Rocci.
108 Desiccated Milk in Infant Feeding. (Il latte in polvere nell'alimentazione dei lattanti.) G. Finizio.
109 *Scarlet Fever Developing in Surgical Patients. (Scarlatina da ferita.) F. Luna.
110 *Congenital Rachitis. M. Reano.
111 Local Necrosis Following Skin Tuberculin Test. (Incidenti secondari alla cutirizzazione di v. Pirquet.) F. Fonzo.

106. **Luetin Reaction in Inherited Syphilis.**—Cannata's experience has been quite favorable with Noguchi's technic for serodiagnosis of inherited syphilis. The findings were not always correct, but the proportion of correct responses was larger than with the Wassermann test in the 100 syphilitic children and the 30 non-syphilitic controls tested. In the latter group there was never any luetin reaction, and the reaction was negative in 17 of the 51 children less than a year old with positive signs of syphilis; the Wassermann in this group gave a negative response in 35. In older children the tests paralleled each other more closely. In a total of 56 cases with negative Wassermann the luetin test was positive in 41; the advantages of thus revealing the inherited taint early are obvious.

107. **Influence of Fat on Gastric Digestion of Milk.**—Riva Rocci states that the presence of fats in his experiments much facilitated the digestion of milk in the test-tube by the digestive ferments in an acid medium. He theorizes to explain this by assuming that the droplets of fat throughout the mass of coagulated milk hold the particles apart enough to permit capillary action, and thus promote the diffusion of the digestive ferments through the mass and their action on a larger surface of the particles forming it.

109. **Scarlet Fever in Surgical Patients.**—Luna witnessed the development of typical scarlet fever in three children after tracheotomy for diphtheria. In two of the children mediastinitis and purulent pleurisy developed and both died. The third child recovered after passing through nephritis during desquamation. The location of the wound in cases of "surgical scarlet fever" has an influence on the prognosis. When the wound is on an arm or leg, for instance, infection of the glands in the region is not so serious as when the glands are in the chest or throat. As a rule the "surgical scarlet fever" is mild and is in reality merely a scarlatiniform eruption around a suppurating wound. But a number of cases are on record with the typical angina and the rest of the syndrome, but even with these recovery is the rule without complications. Hahn has recently reported seven cases of scarlet fever developing consecutive to operations for empyema and three secondary to accidental wounds, burns, etc.

110. **Congenital Rachitis.**—Reano relates that he has examined 854 newly born infants at Turin seeking for signs of rachitis and comparing the signs found with the development of the children, especially in regard to appearance of true rachitis later. The size of the fontanels, the greater or less hardness of the skull, the existence of parchment-like areas, abnormal palpation findings in the articulations between the costal cartilages and the sternum—none of these findings can be regarded as signs of rachitis in the newly born, as all are liable to become modified to normal conditions as the child grows when the environment, the inheritance and the food do not predispose to rachitis. Parchment areas in the skull subsided spontaneously in about 50 per cent. of the cases in which they were found and generally in two or three months, without rachitis developing later. In the other 50 per cent. signs of pronounced rachitis were manifest when the sixty-four children were reexamined at 6 months of age.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam
June 6, LVIII, No. 23, pp. 2045-2230 and Supplement

- 112 *Remote Sensations from Faradic Stimulation of Points in Post-Central Gyrus in Conscious Patients. ("Sensible punten" op de schors der groote hersenen van den mensch.) C. T. van Valkenburg.
- 113 Fetus Compressus; Two Cases. M. Kamerling.
June 13, No. 24, pp. 2231-2338
- 114 Animals Trained to "Think." (Denkende dieren: het aandel der menschen.) G. van Rijnberk.
- 115 *Examination of Heart through the Esophagus. (Onderzoek van het hart van den slokdarm uit.) C. E. Benjamins.
June 20, No. 25, pp. 2339-2418
- 116 The Workings of Workmen's Compensation Legislation. (Gevolgen der ongevalwet.) P. Kooperberg.
- 117 Anatomy of the Nose. (Het kleppenstelsel van den neus.) P. J. Mink.
- 118 *Alternating Hemiplegia Following Injection of Alcohol into the Gasserian Ganglion. G. C. Bolten.

112. **Sensory Foci in Brain Cortex.**—Van Valkenburg gives details of two cases in which during an operation on the brain during local anesthesia alone he applied faradic stimulation to the postcentral gyrus and found that this induced sensations in the fingers and around the mouth. He gives diagrams of the sensory points and the regions they control, comparing his findings with those of Cushing and Krause in this line. The foci were well defined. The patients were young men of 17 to 25, with epileptiform seizures for one or four years. They said that the sensations from faradic stimulation resembled those at the aura of their seizures.

115. **Examination of the Heart by Way of the Esophagus.**—Benjamins describes the technic for esophageal cardiography, auscultation of the heart sounds and other means of studying the action of the heart through the esophagus, and gives characteristic findings. He ties a finger condom on the tip of a rubber tube and introduces it for about 32 or 35 cm. from the teeth. Then the condom is inflated and the whole connected with a recording drum and the movements of the left auricle then register themselves on the drum—an esophageal cardiogram which can be usefully studied synchronously with the electrocardiogram as he shows by a number of tracings.

118. **Hemiplegia Following Injection of Alcohol into the Gasserian Ganglion.**—Bolten's patient was a woman of 58 who had suffered for years from extremely severe trigeminal neuralgia of all three branches. She had intense headache after the injection and was given morphin. The temperature ran up to 104 F. and symptoms of paralysis on either side alternated but gradually improved so she is now able to be around. Bolten adds that the neuralgia was conquered by the operation, and that the symptoms observed should be credited to the unusual neuropathic taint in the family. This exceptional occurrence should not bring discredit on the deep alcohol treatment of trigeminal neuralgia. That the patient has practically entirely recovered shows that no serious damage was done.

Hospitalstidende, Copenhagen

August 26, LVII, No. 34, pp. 1049-1080

- 119 *Further Research on Spiroptera Cancer in Rats. (Fortsatte Undersøgelser over Spiroptercarcinom hos Rotten.) J. Fibiger.

119. **Animal-Parasite Cancer in Rats.**—Fibiger has continued his study of the cancers found in the stomachs of rats and evidently connected with the special parasite discovered in them. It seems to be a new species of *Spiroptera* and it has been found to date only in the numerous rats infecting three sugar warehouses and among these only in the decumanus. None was found in 1,100 rats from other parts of Denmark nor in 350 from other countries. The cockroach seems to serve as an intermediate host, and Fibiger thinks that these insects probably were brought with the cargo of sugar from the West Indies. The parasites were found in 7 of 8 dead rats sent him from one of these West Indian ports and in 52 of 70 cockroaches. In 6 rats and 150 living cockroaches from another West Indian port he found the nematode in 3 of the rats and in 27 of 45 cockroaches exam-

ined. These findings confirm that the parasite belongs to a tropical species. It can be communicated to other varieties of rats and other rodents, and other insects beside the cockroach can serve as the intermediate host, the bedbug and the meal-worm. He fed 91 rats with infected cockroaches. Some have been under observation since June, 1912, and no less than 12 have developed carcinoma in the stomach, the findings corresponding in every respect to those on which he published his first report. The article is not concluded in this issue of the *Hospitalstidende*. [His previous communication was discussed editorially in *THE JOURNAL*, April 5, 1913, p. 1077.]

Ugeskrift for Læger, Copenhagen

July 30, LXXVI, No. 31, pp. 1353-1388

- 120 *Trauma and Osteomyelitis. H. C. Slomann.
August 6, No. 32, pp. 1389-1418
- 121 Mode of Therapeutic Action of Sunshine. (Om den moderne Helioterapi Virkemaade.) T. Brinch.
- 122 Remittent Hydronephrosis. G. Espersen.
August 13, No. 33, pp. 1419-1448
- 123 *The Pirquet and Salve Tuberculin Tests on Children. (Om kutane og perkutane tuberkulinreaktioner.) Monrad.

120. **Trauma and Osteomyelitis.**—Slomann's article is based on the experiences of the wage-earners' sickness insurance companies in Denmark, 1910 to 1912. There were 2,128 cases of sickness among the 140,000 industrial workers insured and 1,940 among the 300,000 field workers. These figures include 32 cases of osteomyelitis for which a traumatic origin was claimed, but the connection was not proved in 14. Slomann compares these cases with 104 cases of osteomyelitis at the Copenhagen public hospital in the last ten years. It developed after tonsillitis in 7; after enteritis in 4; after pyuria in 2 cases and after furuncles or other superficial suppuration in 9. The antecedents were not known in 54 cases. In 33 cases trauma was incriminated, but in 10 there had been an interval of three weeks or more without symptoms so that the connection with the trauma seems out of the question. The remaining 23 cases were unmistakably of traumatic origin. In 3 the skin had been injured so that inoculation of germs was probably the main factor. In the others the trauma had been a contusion and the osteomyelitis had developed in less than eight days in the injured region.

Spontaneous osteomyelitis is shown by his figures to be four times more common than the traumatic; the latter formed 19.2 per cent. of the cases reviewed. The period of incubation was at longest only twelve or fourteen days and in 3 cases there were fever and more or less pain and swelling the same day as the contusion. The connection with the trauma is plausible if the accident was of such a nature as to render injury of the bone-marrow probable; it need not have directly affected the spot involved, as for instance when the whole skeleton or a large part of it is jarred by a severe fall. A connection with the trauma may be accepted if the osteomyelitis develops directly after a period of extravasation of blood, swelling, tenderness, etc., in the region affected by the trauma. When this is the case the interval may be even longer than two weeks and still the osteomyelitis form part of the traumatic syndrome.

123. **The Tuberculin Skin and Percutaneous Reactions in Children.**—Monrad has had the Pirquet test applied to 3,408 children and the Moro salve test to 333. The latter is so simple and convenient and the findings parallel those of the Pirquet so closely, that he wonders it is not more generally used. The two reactions were concordant in 323 of the 333 cases and in 6 of the 10 cases in which the reactions conflicted, the course of the cases confirmed the salve-test findings. A negative response to the Pirquet test, he declares, may be accepted as excluding tuberculosis with 97 per cent. certainty. A positive reaction under 1 year of age indicates always active tuberculosis; between 1 and 2 years it indicates this in six-sevenths of all the cases and in two-thirds of all between 2 and 5. Over 10 the conditions are more as in adults, about two-thirds of the positive reactions being traceable to inactive tuberculosis.

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OSTEOPLASTIC CLOSURE OF THE TRI- FACIAL FORAMINA*

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The accompanying experimental study was undertaken to determine whether or not it was possible so to close a nerve-canal through bone as to prevent the nerve from reaching the surface and functioning. The result may find practical application in various conditions, but primarily it may be of use as a substitute for certain palliative procedures now employed in the treatment of trifacial neuralgia, namely, those methods used when for some reason the intracranial procedures are rejected and when the simpler alcohol injections fail to give relief, as for instance the use of screws of metal or ivory, or paraffin, or guttapercha or other similar devices.

The anatomy of the dog's infra-orbital nerve lends itself particularly well to this method of study. It is really more satisfactory than that in man. The nerve is large and the foramen overhanging. On the other hand, there is greater possibility of infection.

The experimental work falls into three groups:

A. Avulsion of the nerve with curettage of the canal, breaking down of the foramen and covering the area as well as possible by pedicle-flap of adjacent periosteum.

B. Avulsion of the nerve, curettage of the canal and a transplant of periosteum from some other part of the body.

C. Avulsion of the nerve, curettage of the canal, and a transplant of bone to fill the canal.

It was found advisable in the dog to make the incision through the mucous membrane at the junction of the lip and jaw. The dogs were run in series, being killed in forty-five, ninety and 180 days.

An attempt was made to determine the best method of removing the periosteum within the canal and at the foramen with the idea of favoring bone growth and closure of the canal or union with the bone transplant. Various types of olive-pointed burrs were used and others made to order, but it was found in the end that small, sharp curets were more satisfactory. Likewise the best method of avulsing the nerve was studied and various broaches were made similar, only much larger, to those used by dentists in avulsing the nerves of teeth. These also were abandoned as being inferior to simple avulsion. It was found that the best results were obtained by grasping the nerve firmly and twisting very slowly so that from five to ten minutes were consumed in the procedure.

For the sake of conciseness, the detailed report of each experiment, although kept, is not reported here. The results in the various groups may be classified as follows:

In the series with the avulsion of the nerve, curettage of the canal, breaking down of the foramen, and covering the area with a pedicled periosteal flap, the experiments were uniformly successful in obliterating the canal if the work was thoroughly done. Some difficulty was found in preserving adjacent periosteum in good condition for flap trans-

plant, and in no case was it perfectly satisfactory. A similar difficulty was later encountered in the patient operated on.

In the second group with avulsion of the nerve, curettage of the canal and a transplant of periosteum from some other part of the body, the results were not nearly so successful. The nerve grew through in a majority of instances in spite of the fact that infection was infrequent.

In the third group with avulsion of the nerve, curettage of the canal and a transplant of bone to fill the canal, the experiments were successful except in those cases in which infection ensued, a complication that was rather common, incident to the presence of the wound in the mouth. In these cases after a few months the nerve grew out through the osteoporotic

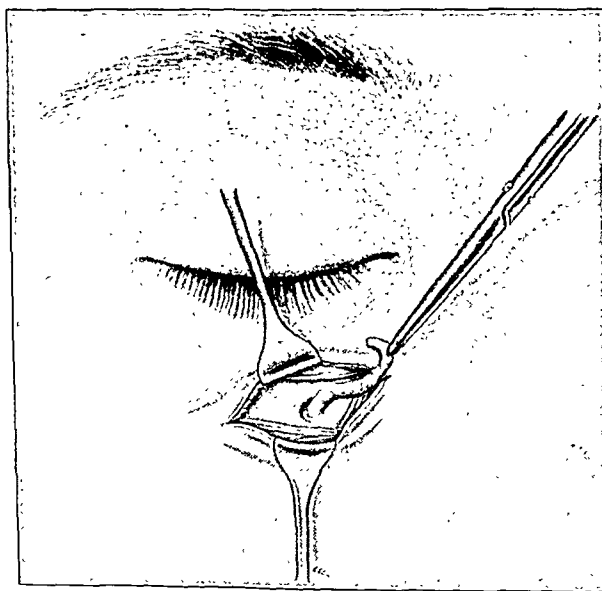


Fig. 1.—Method of exposing and removing the infra-orbital nerve by torsion.

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

tissue between the canal wall and the osseous transplant.

In the successful cases complete bony closure ensued. The results were sufficiently satisfactory to lead to the assumption that under favorable conditions the canal would be completely obliterated. Where the result was satisfactory the nerve was found to have grown down along the canal to its full extent and to end blindly at the original point of exit. The bone wall itself on external inspection presented no evidence of a previous foramen. Microscopic sections of the

are not relieved by injections or in those patients who refuse intracranial procedures—in other words, where it has been customary to avulse the nerve or fill the foramina with foreign bodies.

It must be remembered that all peripheral operations fail to prevent the return of pain along the filaments that leave the nerve back of its point of exit from the

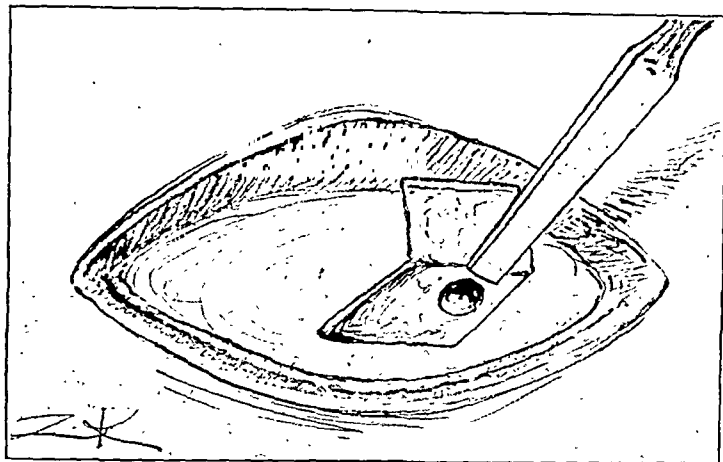


Fig. 2.—Breaking down the rim of the infra-orbital canal.

connective tissue immediately adjacent to the bone and over the old foramen and opposite the nerve ending failed to disclose any nerve-fibers, so that we must conclude that they had not grown through.

CLINICAL APPLICATION

The foregoing results of experimental work are presented as proof of a *principle in surgical pathology on which study may be made in the future* and must not be construed as an advocacy of this method of opera-

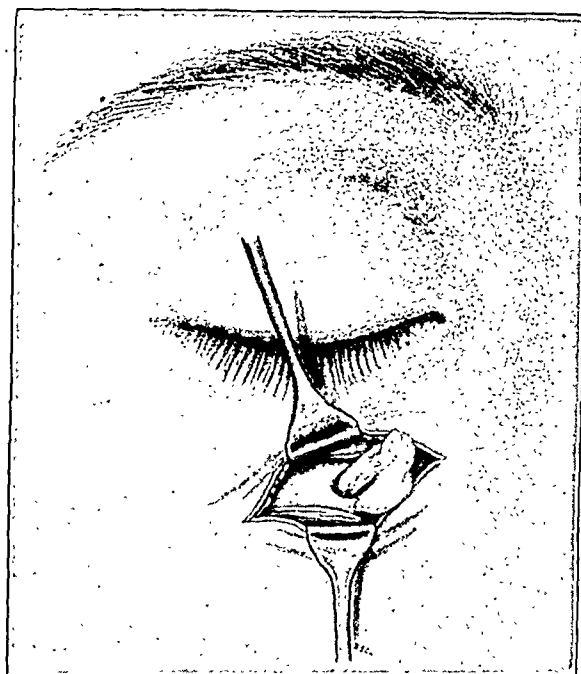


Fig. 4.—Transplanted bone plug in position with periosteum attached.

foramen, as for instance, that portion of the infra-dental that goes to the side of the tip of the tongue. In my patient, however, in which this occurred, it has not given rise to complaint and was elicited only on questioning.

The work can, for the most part, be done under local anesthesia especially by trunk injection. The method

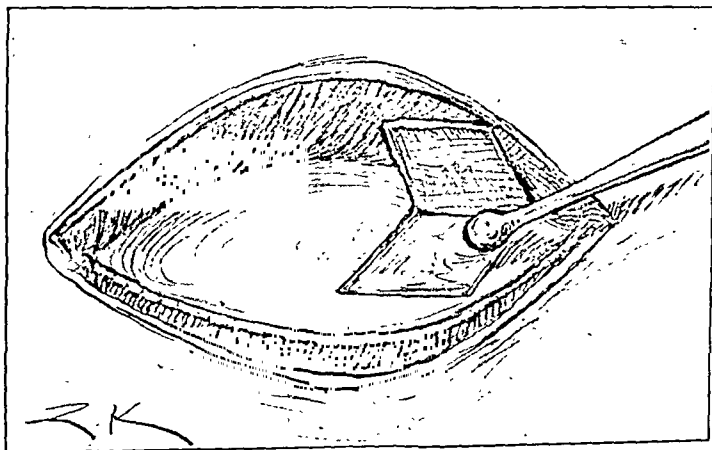


Fig. 3.—Curetting the infra-orbital canal thoroughly so as to remove all periosteal tissue.

tion in all cases of tic douloureux. It may be justifiable, however, to suggest lines of future clinical study as they occur to me. It would seem that the procedure would not be indicated in those patients on whom the removal of the ganglion or excellent intracranial operation first proposed by Frazier and Spiller can be done with safety. It probably would not be indicated in those patients to whom alcohol injections give complete relief for a considerable period. It may be justifiable to study its field of usefulness in greatly debilitated patients who are not good surgical risks and who

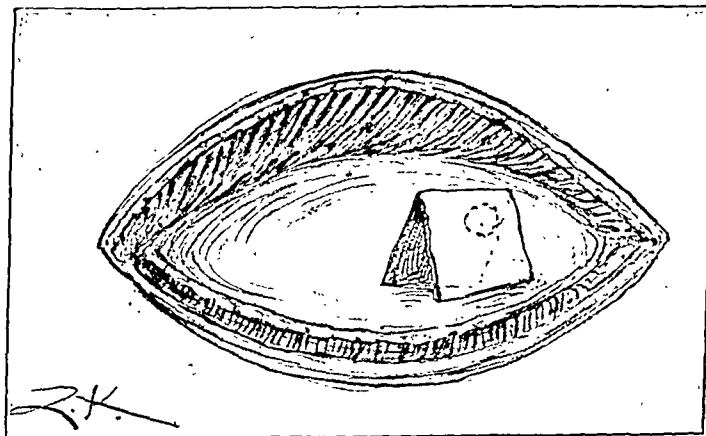


Fig. 5.—Detached periosteum thrown over site of operation. In the operation this could not be as satisfactorily done as would appear from the picture.

employed in the patient operated on by myself is seen in the accompanying illustrations.

In the operation on the infra-orbital nerve the incision was made in the line of the skin-crease and the nerve slowly twisted from its trunk. The periosteum was so thin that a satisfactory pedicle flap could not be made, although this was done as well as possible. The bone was extremely thin and friable, necessitating care in the curettage of the canal. This was done thoroughly, paying especial attention to the foramen.

A small bone plug $\frac{3}{4}$ inch in length and as near the size of the canal as possible was removed from the tibia, a piece of periosteum the size of a penny being left attached to its outer end. This was then wedged into the canal down to the attached periosteum. The adjacent periosteum was pushed over it and the skin closed by a subcutaneous stitch (Figs. 1-5).

In the infradental branch an incision was made under the angle of the jaw so that the scar would be

thus endangering the lacrimal sac. Again care must be taken not to injure the facial nerve when retracting the muscle at the angle of the jaw.

I append a brief report of the patient operated on who has been without recurrence of her trouble for nine months, too short a time, certainly, for the final report, which will be made at a later date.

REPORT OF CASE

History.—Mrs. A. L., aged 74, admitted to Wesley Hospital, Oct. 26, 1913, discharged, Nov. 1, 1913, six years ago began to have pains over entire left side of face. They were of a dull, aching character. Patient states that they came

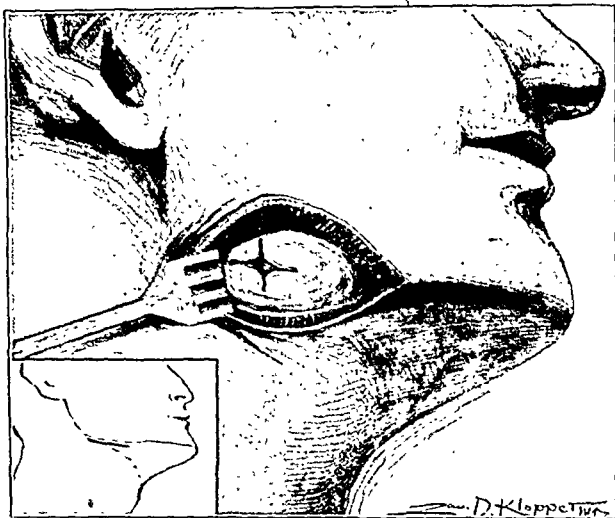


Fig. 6.—Crucial incision over site for bone plug over infradental canal.

out of sight. The skin and muscle were next detached from the angle upward. A crucial incision (Fig. 6) was made in the periosteum at the angle over the area of the nerve; then with a small trephine a button of the outer plate of bone down to the medulla was removed (Figs. 7-11). The nerve was found and twisted out of its canal. The canal was then curetted thoroughly and broken down. The button of the outer

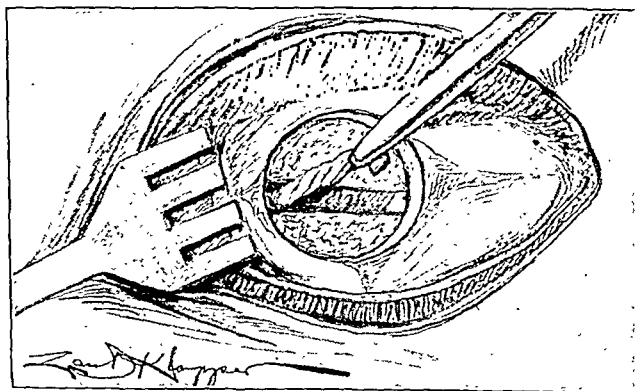


Fig. 7.—Torsion and removal of infradental nerve.

plate was now reinserted, being rotated 90 degrees so that the destroyed canal of the button was at right angles to the canal in the bone, and it was driven into the medulla between the two tables at the proximal side for a fraction of a centimeter. The periosteum and muscle-flaps being now restored, the skin was closed by a subcutaneous stitch. The patient was warned not to use the jaw too violently for some weeks.

A word of warning should be given against extending the infra-orbital incision too far toward the nose,

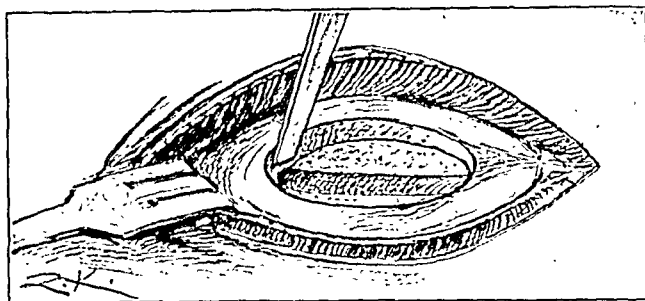


Fig. 8.—Breaking down infradental canal.

on subsequent to the extraction of a lower tooth. They kept increasing in severity but she complained mostly during the day, especially in the morning. She slept all right at night. The treatment relieved her for a period of six or seven months, when the pain came on again, similar in character with the same aching, burning pains.

About two years previous to the time of this report she was at Wesley Hospital and had the nerves injected with alcohol. This relieved the patient again for a period of six months, the pains coming on again at the end of this time similar in character to previous attacks. This continued up to the date of her admission to the hospital, Oct. 26, 1913. The pain has been worse the last five or six weeks, being

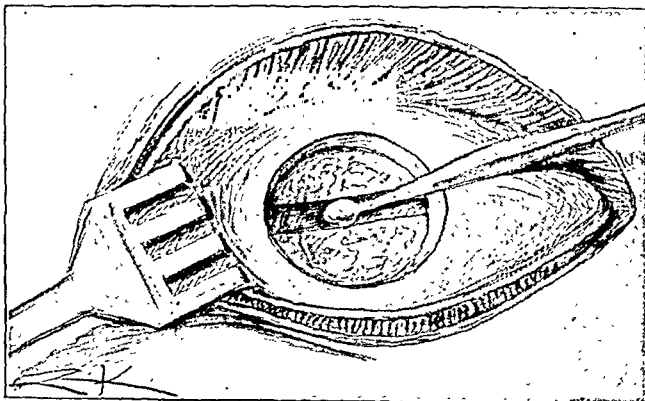


Fig. 9.—Curetting infradental canal.

worse in the morning, but does not trouble much at night. It begins usually on the left side of the upper lip immediately below the ala nasi, then the lower lip on the left side. This then radiates up the left side of the face and terminates in the left temporal region. Patient sleeps well, bowels, constipated; appetite, fair; uses two to three grains of morphin daily.

Examination.—Physical examination showed in brief, a markedly anemic and emaciated patient with tenderness over the supramaxillary and inframaxillary nerves. The supra-orbital was not involved. There was marked pain on chewing and talking.

Cardiovascular Examination: Patient cyanotic; pulse, irregular, extra systole. Vessels hard. Apex, beat fifth interspace. Dulness midsternum to midclavicular line. Apex, two tones, systolic murmur. Aorta, two tones, systolic murmur. Pulmonic, two tones, no murmur. Extra systole every fifth to tenth beat.

Remainder of physical examination is not of importance in the present instance. At operation the inferior dental and infra-orbital nerves were operated on by the method discussed above. Patient made an immediate recovery, although

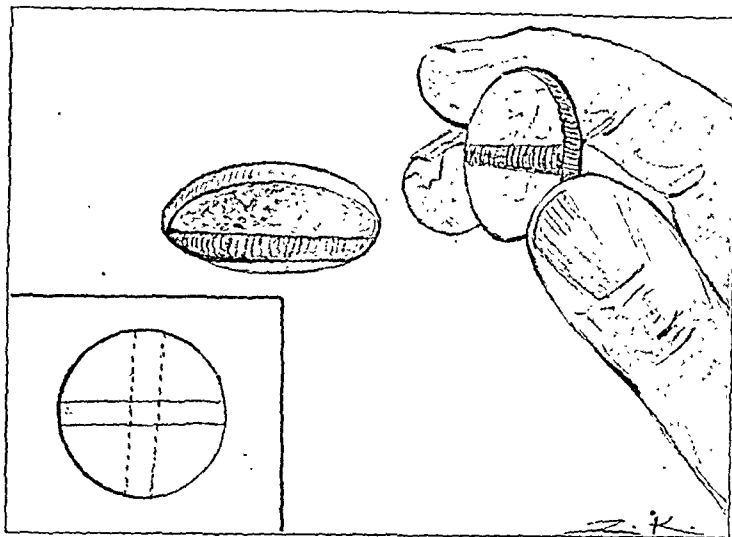


Fig. 10.—Replacing bone plug at right angle to the canal.

for five or six days she had a moderate facial paralysis. This entirely cleared up, as may be seen by the photograph (Fig. 12), at the end of a week. March 28, 1914, the family reported that the patient had ceased the use of morphin and had no pain except that lately she had noticed some pain in the tip of the tongue on the left side. There was no paralysis and the scar was not visible to ordinary inspection. On examination, June 15, 1914, the patient was found to be in similar condition and perfectly satisfied with the result.

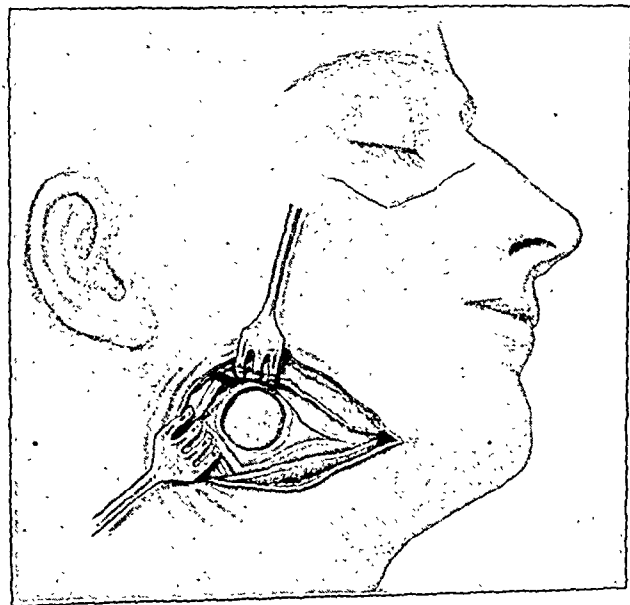


Fig. 11.—Subcutaneous stitch closing over the infra-orbital operation and the method of driving the plug between the two laminae of the lower jaw.

In conclusion I wish to emphasize that this work is presented purely as an experimental and clinical study, and I should not wish to be betrayed by enthusiasm into advocating the operation until further experience has been accumulated by myself and others.

I wish to acknowledge my indebtedness to Dr. Lester H. Hills for assistance in the experimental work.
31 North State Street.

ABSTRACT OF DISCUSSION

DR. S. J. MIXTER, Boston: The procedure suggested by Dr. Kanavel seems worthy of trial in those cases in which the deeper operation cannot be done. No one could question the advisability of doing the more serious operation if it were possible, but we have all seen cases in which that is not possible and in them this method is worthy of trial. This brings up the whole question of the possibility of stopping the growth of the sensory nerve by plugging a canal. We have all tried, unsuccessfully, generally, to plug the foramina on the face. The inferior dental, the infra-orbital, plugged with screws and other substances, are generally failures. How far a nerve can be plugged is a question. I do not wish to bring up in any way the treatment of trifacial neuralgia, because that is not included in this paper. It is general operative treatment, but I may say that nerves can be so shut off as to prevent recurrence of pain. It has been my custom in doing the intracranial operation not to do the beautiful operation that Dr. Frazier originated and that has been done so successfully, but to do what to me is a less serious operation, that is, divide the second and third division inside the skull, and fill the fossa and lamina with a mass of amalgam. I find that that prevents recurrence of



Fig. 12.—Patient a week after operation.

pain, in my hands at any rate, and is a less severe operation than the one on the root. Dr. Kanavel's method certainly is one that should be tried. On the receipt of his paper a few weeks ago I was so impressed with the value of the procedure that it occurred to me to try it in the intracranial operation, and in that case, instead of using amalgam as I usually have done, I made some plugs from the tibia and drove them firmly in place from the inside of the skull into the foramen ovale and the foramen rotundum. I found it was not so simple, in a way, because bone is hard, the nerves are brittle and it was rather difficult to get a good-fitting plug; but after a little effort the plugs were made, driven firmly in place and the patient has had no trouble so far. Of course the time is too short to draw any conclusions as to the ultimate results, but the procedure seems to me worthy of trial. If these canals can be closed permanently by bone plugs it seems to me it is possible to prevent recurrence of pain.

General Laws.—Ability to recognize individual pathological phenomena is of prime importance, but the power to grasp the meaning of general laws according to which tissues act and react is paramount.—Adami and McCrae.

MYOSITIS

ISCHEMIC MYOSITIS: INFILTRATION MYOSITIS: CICA-
TRICIAL MUSCULAR OR TENDON FIXATION IN
FOREARM: INTERNAL, EXTERNAL AND COM-
BINED COMPRESSION MYOSITIS, WITH
SUBSEQUENT MUSCULOTENDINOUS
SHORTENING *

JOHN B. MURPHY, A.M., M.D., LL.D., F.R.C.S., (ENG.)
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In 1869 Volkmann described a contracted condition of the flexor muscles of the wrist, hand and fingers which he termed an ischemic paralysis, but which came to be known clinically as Volkmann's contracture. He believed at that time that the condition was due to a death of the muscle cells consequent on a prolonged deprivation of the blood from the part, or an interference with the circulation leading to a malnutrition and caused by pressure of a splint or bandage applied, for instance, in a case of fracture of the radius and ulna, or of the humerus near the elbow joint. He stated that very rarely did the condition follow an injury or a fracture in which neither a splint nor a bandage is used. This was true in one case seen by us, in which a contracture of the flexor tendons of the arm followed a trauma, a street-car running over the patient's forearm. It is the only case of the kind we have seen. The muscles of the arm, as the biceps, can have a similar contraction, as shown in many of our cases. However, the condition is most often met with consequent on fractures at the elbow joint or in the forearm, but it does occur in the lower extremity as well as in the upper. Certain it is that a severe contusion of the muscles of an extremity, without fracture or external wound or evidence of injury, may be followed by this contracture. Cases are also recorded in the literature in which a tight plaster-of-Paris cast has caused "an immediate paralysis of the muscles" and a subsequent contracture. In our cases it is fairly clear that hemorrhage beneath the aponeurosis of the upper forearm following fracture or injuries of the deeper structures can cause myositis and subsequent contraction, even when splints or bandages have not been used. These are the internal compression variety. The splint causes the external variety.

Bardenheuer is of the opinion that the condition is caused entirely by a vascular disturbance, that is, that the degenerative changes in the muscle cells are due directly to a venous stasis, and that the cells are poisoned by the metabolic products in the blood-stream.

Other observers are of the opinion that the condition is simply one of localized anemia, and J. J. Thomas regarded it as a case of nerve involvement, laying considerable emphasis on this phase of the etiology. We believe that it is a pressure ischemic myositis, from hemorrhage and effusion into the muscles, aided by the constriction of a splint or bandage or a tight skin, which leads to a myositis from pressure anemia and later to a contracture of the muscle as a whole, and therefore a shortening of the muscle tendon. An acute flexion of the elbow following injuries leads to the same condition. All observers are agreed that ischemic myositis and contracture follow fractures more often

than any other cause; in fact, 80 per cent. of these cases follow fractures, especially fractures in the neighborhood of the elbow joint, and among these supracondyloid fracture of the humerus stands out prominently.

As the result of a fracture the tissues are bruised, a blood and serum effusion follows and the tension in the subfascial zone in the forearm can be so great as to cause cyanosis of the whole forearm and hand. A blood-clot forms in the tissues, inflammation follows, with a deposit of the inflammatory products in the tissues. We believe that the injury to the artery plays little or no rôle in the destruction of the protoplasm of the muscle cells. It is the pressure which causes the cell destruction, unless it be the continuous forcing of blood into the tissue after the venous circulation is retarded by the tension on the elbow veins. The obstruction is in the veins and not in the artery, as the great edema always indicates obstruction to return circulation and not to arterial circulation. Arterial obstruction leads to dry gangrene; venous to wet gangrene. The radial pulsations are present throughout the entire course of some of the cases. This should not be so if the artery were injured.

We have seen a large number of these cases and are convinced from our experience that it is the tight bandage, aided by the tight skin and fascia, that does the mischief. The damage is practically all done within the first forty-eight hours after the application of the bandage, or after the acute flexion of the forearm, and we have seen one case in which the damage was present as early as six hours after the application of the bandage. We are convinced from our observations that muscular contraction from trauma of the elbow joint is most commonly the sequence of bandaging. It is a traumatic myositis, the result of pressure produced by a circular bandage or a splint applied too firmly against the skin, fascia and muscles of the arm or forearm, so resisting the edema traumatica that cellular ischemia and necrosis result.

All the damage, so far as the myositis is concerned, is done within the first seventy-five hours, but the contraction of the muscles and the flexion deformity of the fingers does not show itself fully until weeks have elapsed, four to six, the fixation becoming permanent in from ten to twelve weeks. It then remains stationary, except for the additional deformity which is produced by the growth in length of bone without a growth of muscle. This makes it appear as though the muscles were continuing to contract, which is not my view of the case. The damage is done so quickly that this fact and a study of the symptomatology lead one to the conclusion that constriction of the forearm is the indirect cause of the contraction. One must bear in mind, too, that the lesion is always on the volar side of an extremity, the side on which the large arterial trunks are situated. In other words, it is always a flexion contraction and not an extension contraction, notwithstanding that the posterior splint will have as much pressure on it as the anterior, as it must act as a counter-support for the bandage or cast.

There is not a paralysis of the motor nerve as a result of the ischemia, except when the nerve is especially compressed.

The nerves may be involved as a result of (1) severe primary inflammatory infiltration of the tissues

* Read before the Section on Surgery at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914

* Because of lack of space this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped addressed envelope.

pressing on the nerves; (2) by diffuse pressure of the primary myositis, which I very much doubt; (3) by cicatricial contraction on the nerve, also doubtful; (4) by direct traumatic compression to the nerves, always possible; (5) by the pressure of excessive or exuberant callus; (6) by division of the nerve.

The term "ischemic paralysis," with muscular flaccidity and elongation, may be used in these cases of nerve involvement as indicative of its being a compli-

cation of an ischemic myositis; but even then we believe that it would be far better to term the condition an ischemic muscular atrophy or myositis with paralysis. So far as the real pathologic condition is concerned which is responsible for the contracture, it is purely an anemic myositis, as we believe, the result of pressure by a cast, bandage or splint on an edematous infiltrated tissue. We have similar examples where extremities have had constrictors on for hours at a time for the emergency suppression of hemorrhage, with temporary ischemic neuritis, or axonal transmission is suspended but is not followed by contracture. When a bandage is applied too tightly around the knee, for example, or if a plaster cast is applied to the knee and remains uncut, the external popliteal nerve may be compressed as it

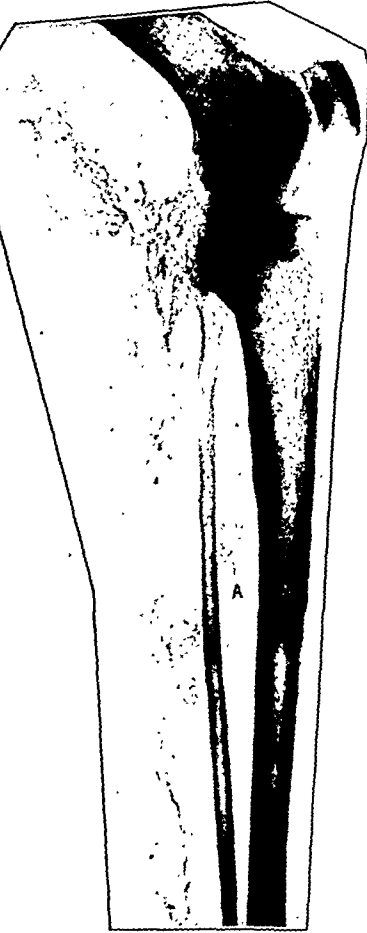


Fig. 1.—Contraction of knee, result of myositis ossificans. The thickening and induration of the blood-vessels is shown well at A. The deposits in the muscles are numerous and of considerable size.

passes over and around the neck of the fibula, winding from behind forward. This results not in a muscular contraction, as we see it everywhere else in the body, but in a paralysis and elongation of the muscle, which in the lower extremity is recognized as a drop-foot.

It is a common sequence of a prolonged Buck's extension, or the pressure of a plaster cast on the nerve, or of its compression by a splint or circular bandage. It results in a paralysis of all the extensor group of muscles on the anterior surface of the leg, and later a contraction of the calf muscles follows, causing a talipes equinus. The drop-foot so commonly present after fractures of the leg and thigh is a dressing sequence and not an injury sequence, and is due to a degeneration of the protoplasm of the motor neurons, known as the axis cylinder. The nucleolus of the neurons in the anterior cornu is not disturbed.

Occasionally, in traumas to the arm, forearm, thigh and leg, the muscle bellies are cut through to the bone, and extensive hemorrhage takes place into them. The muscles become adherent or united to the periosteum, causing their fixation and immobilization, so that vol-

untary contraction or extension cannot be produced below the point of muscular fixation. Absorption of the adipose tissue may follow this contusion, and the skin is frequently attached directly to the aponeurosis or belly of the muscle. A myositis ossificans may occur, and when it extends into the muscle for a considerable distance it not infrequently produces a contraction and a limitation of motion. Intramuscular angiomas, as the result of trauma or infection, may have a phlebitis, which in turn causes a deposit throughout the muscles or muscle group of an extremity, resulting in contraction and fixation, with permanent deformity, as shown in one case (Fig. 1).

Now, as to the symptoms of this condition: Let us consider the cases occurring in the upper extremity, as these are, after all, the most common as well as the most important. The first symptom noted is a stiffening of the fingers and a swelling of the fingers, hand and forearm. In most cases there is also a discoloration, a cyanosis, although in one of our cases it was stated in the history that there was no discoloration at any time. Occurring almost simultaneously with these objective symptoms is *pain, usually intense*; the patient, whether child or adult, does, as a rule, complain of the pain very much, though by the attendants and friends it is regarded as a necessary adjunct or concomitant of the fracture. There is soon limitation of motion and then complete loss of motion in the fingers. If the constricting agent, the hemorrhagic edema, the bandage, cast or splint is not removed, the swelling and cyanosis may increase in degree, although the pain gradually lessens in severity, and after a few hours or days disappears entirely. Finally, the swelling and cyanosis disappear, but normal motion in the fingers is not restored. In some cases the symptoms are very slight in degree. The patient may not suffer severe pain at all, but the result to the muscle is the same. The swelling of the forearm and hand is always present in the early hours and gives the signal of danger.

The progression of the pathologic changes is rapid. The electrical reaction of the affected muscles is first suspended, except in the cases in which there is an associated nerve lesion, when the reaction of division or degeneration may be present.

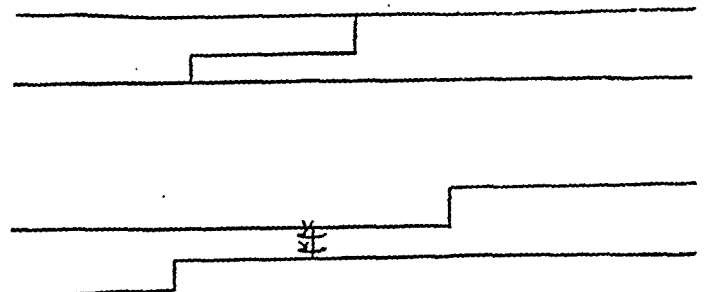


Fig. 2.—Method of tendon elongation. Double J. incision and approximation by suture of long ends of two L's.

Let us view concisely the symptom-complex as it occurs in one of these cases, say following a supra-condyloid fracture of the humerus. A fracture is not necessary, as is shown in one of our cases. There is first the injury of the joint and the surrounding tissues, causing an infiltration of the tissues and a compression of the vein which results in a venous stasis. Second, the *local infiltration* in the upper forearm, severe in degree, causing a woody hardness, bronze glistening skin and severe pain, the result of the venous stasis in the subcubital tissues. Third,

degeneration and atrophy of the muscle cells and cicatricial formation. Fourth, contraction of the muscle scar and tendons leading to a deformity of the hand and fingers. Fifth, electrical changes in the muscles, if much muscle tissue is destroyed or when the nerve-supply is injured in the manner stated above. The paresthesias, anesthetics and hyperesthesias are accounted for by the associated nerve lesions.

There may also be some constitutional disturbance, such as elevation of temperature, some malaise, sensa-

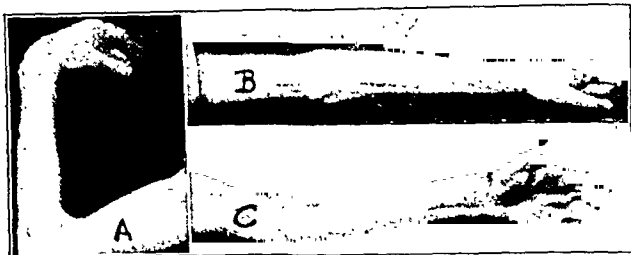


Fig. 3 (Case 2).—A, position of hand before operation, the result of forcible contraction, being flexed at right angles; even in this position the fingers could not be extended. B and C show the degree of flexion and extension of the fingers five months after the tenoplasty was done on the flexor tendons.

tions of chilliness, but, as a rule, these are absent or so completely overshadowed by the *pain* that no notice is taken of their existence. In a few cases the interossei and lumbricales are also involved; that is, there may be a slight atrophy. The most characteristic and at the same time early severe symptoms are the pain and the swelling. The other symptoms are in the nature of associated symptoms, but should be looked for in making the diagnosis.

As to the late diagnosis of this condition: The deformity of the hands and fingers is in itself diagnostic. It is the typical claw-finger, *main-en-griffe*. The fingers are flexed into the palm of the hand when the wrist is extended or partially extended, and even with the use of considerable force the fingers cannot be straightened. The metacarpophalangeal joints are not flexed. When the wrist is flexed, the fingers can be extended wholly or partially, except in the very severe cases, when the interphalangeal joints remain more or less flexed. As the condition progresses the wrist-joint may likewise be flexed and the finger-nails are forced into the palm. The forearm is slightly pronated and the elbow becomes somewhat flexed. The condition is then accompanied by wasting of the flexor muscles, and it may reach so great a degree that the muscles are no longer palpable, but in the place of muscles one feels a hard rope-like mass. Except for the flexion of the joints, they are otherwise normal; that is, their anatomic structure remains unchanged. On the anterior surface of the wrist-joint it is always possible to see or at least palpate the tense tendons of the flexor muscles. They feel like a bundle of large violin strings, and they are made more tense or more prominent on every effort to extend the fingers.

In arriving at a late diagnosis it is well to consider the following if one would avoid falling into error: First, the history of a fracture, trauma or infiltration of the tissues, accompanied by pain; second, swelling of the hand and forearm, cyanosis and severe pain in the forearm, hand and fingers; third, amelioration of the symptoms on the removal of a constricting bandage or compressing splint, or on straightening out the flexed forearm; or fourth, the infiltration continues to

increase in degree in spite of the removal of the bandage; fifth, in complicated cases the presence of anesthesia or paresthesia; sixth, in complicated cases the absence of the radial pulse (this is rare); seventh, they show no improvement with time, but, on the contrary, become worse, and are not materially benefited by massage or electricity.

The treatment may be divided into (1) prophylactic, (2) non-operative, and (3) operative.

Prophylactic treatment consists in—

A. Avoiding the immediate application of compressing splints or circular constricting bandages or casts.

B. Permitting the forearm to assume the position of greatest comfort for twenty-four or forty-eight hours, unless there is a backward dislocation of the elbow, which should be corrected.

C. The elbow should never be fixed in a flexed position immediately after the accident.

D. If the cyanosis still continues with the forearm extended and elevated, the fascia on the antero-ulnar side of the forearm should be split for a distance of 3 to 6 inches subcutaneously. This can be done with a tenotome without any danger of compounding the injury and should be done within twenty-four to thirty-six hours, if good results are to obtain. (If the forearm is dissected one can see the firm capsule surrounding the flexor group of forearm muscles in its upper 6 inches.)

E. Put on the fixing bandage later when the swelling has materially subsided.

F. The displacement of the fragments can be restored six to ten days after the fracture just as well as on the day of the fracture, and with much less hazard to the extremity.

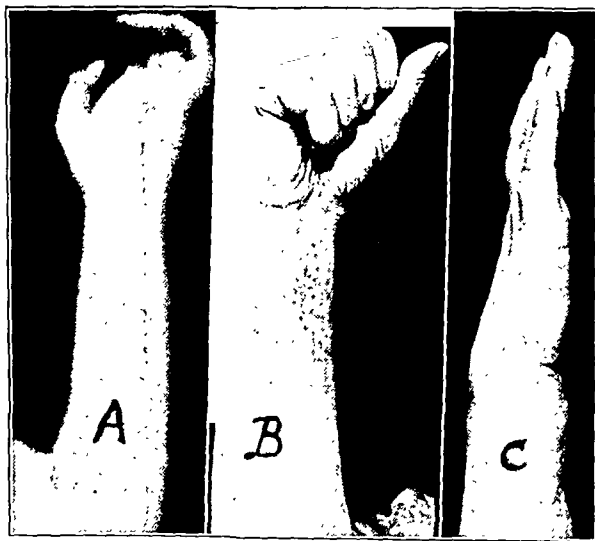


Fig. 4 (Case 3).—A, position of hand and fingers before operation. B and C, degree of flexion and extension one month after operation. The range of motion was normal.

Bandages and splints should never be applied for the purpose of reducing a fracture, and rarely ever for the maintenance of position by force after reduction. They are simply immobilizers or means for limiting voluntary or mechanical disturbance of the bones after reduction is effected. I have seen in the last five years upward of fifty cases of this type, involving the upper extremity, which shows how common the lesion is. In not one of these cases was there any paralysis of sensation or motion, showing that the nerve was

functionating properly. The limitation of motion was due to the contraction of the muscle following the pressure myositis. The treatment of fractures at the elbow joint by the non-bloody extra-articular nailing permits one to place the forearm in any position desired immediately after the nailing.

The non-operative treatment aims at restoring function in the damaged muscle by means of massage combined with passive movement, such as extension of the

wrist or finger joints, supination of the forearm and extension of the elbow. Faradism and galvanism may be resorted to, but have little or no effect. Electrical treatment is not essential, nor is it productive of good results when the cases are severe or recognized too late to be amenable to the prophylactic treatment.

In 1908 Jones of Liverpool reported a method of treatment which he had resorted to with good results in a number of cases. He used an adjustable splint, which was placed on the forearm and the palmar surface of the hand, with an extension along the palmar

surface of each finger. This splint is adjustable by means of set-screws for the wrist and fingers separately. The principle of the treatment is to straighten the splint gradually, a little each day, so that the fingers are straightened out and finally the wrist. The process is continued until the fingers are fully extended with the wrist first sharply flexed, and then the wrist is likewise forced into extension until it is in full extension and the fingers in hyper-extension. Later, massage and electricity are resorted to. Jones has had good results with this method, but it has never become popular. Sayre of New York used this splint in one case, and was well satisfied with it. Naturally, the treatment must be carried on over a great period and can only result in good when the scar tissue is limited.

Mikulicz devised the operation for resection of portions of the bone; that is, the ulna and radius in the case of the forearm. This method has been practiced by a number of surgeons with varying success. The principle of the treatment is to shorten the bone sufficiently to permit of bringing the fingers and wrist into a fully extended position. The section is made obliquely and the divided ends of the bones are fastened together with wire, plates or any other method which the surgeon may choose. The great danger of this operation is the possibility of the occurrence of a non-union, and for that reason it has never become popularized to the extent that it is used in preference to other methods. However, Mikulicz has stated that he has had good results and he should have had when asepsis prevailed and union took place.

Bardenheuer advised an oblique division, or even a transverse division, of the muscles, done subcutaneously, allowing the muscle ends to slide by one another, so that when union of the cut ends occurred the muscle was longer than before. This should not be attempted. The principle of this plan has been used by us rather extensively in lengthening the Achilles tendon, but for an entirely different pathologic condition. Transplantation of the flexor and extensor tendon insertions has also been practiced, although only to a very slight degree.

Finally, there is the operation of tenoplasty, consisting in the lengthening of *all* of the flexor tendons in the forearm just above the anterior layer of the annular ligament. This is the operation which we have performed and with such a uniformly good result that we see no reason for changing our plan of procedure. The operation should not be done until the contracture has reached its maximum, and on account of the danger of adhesions forming to the annular ligament, the work must be done well up on the forearm, or provision must be made to prevent the occurrence of these adhesions.

The principles of treatment consist (a) in the correction of the deformity by tendon elongation, not mere division; (b) in balancing the muscle groups, so that subsequent contraction and deformity do not occur; (c) in the transverse division of such portion of the joint capsule and forearm fascia as is necessary to permit of a full latitude of motion in the joint at the time of operation.

The first is accomplished by the elongation of the flexor tendons by means of a -shaped incision and division of the tendon (Fig. 2). Each tendon should be elongated sufficiently so as to leave a good slack at the time of the primary correction. If possible, adjacent tendons should not be divided on the same plane.

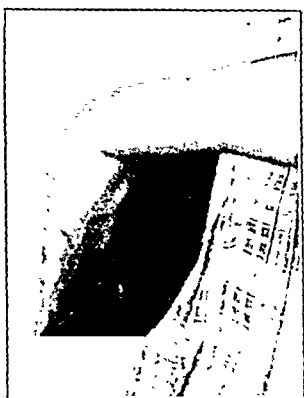


Fig. 5 (Case 4).—Position of hand and fingers before operation. The fingers can be extended with the wrist in flexion. (No photograph after operation. Usual result.)

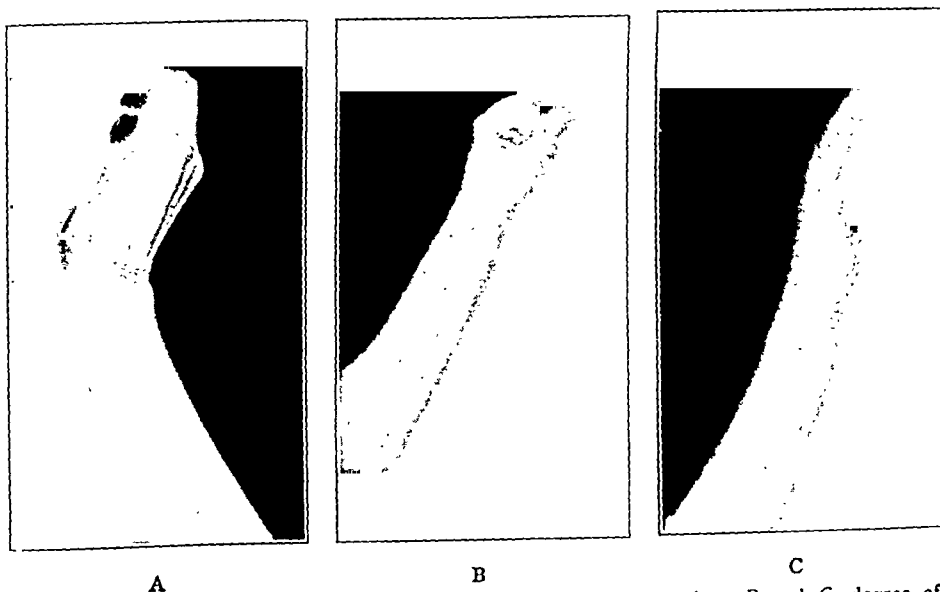


Fig. 6 (Case 7).—A, position of hand and fingers before operation; B and C, degree of flexion and extension seven weeks after operation.

To avoid uniting wrong ends of tendons to one another, a sort of crossing of the wires, the sutures should be inserted in the ends of each divided tendon immediately after the division, not tied, but clamped with a forceps and laid aside. The degree of elongation should be estimated by straightening the fingers and extending the wrist to the fullest extent after division and before approximation. This lengthening may need to be made for as great a distance as 3 inches.

but the degree of lengthening does not in any way increase the difficulty of the operation or militate against the final good result.

When the tendons have all been elongated and sutured with a very fine chromicized gut or silk, if the hand still does not come into a fully extended position, the capsule of the joint should be divided across the anterior surface of the wrist joint. The line of tendon division is covered by a pedicled flap of fat and fascia

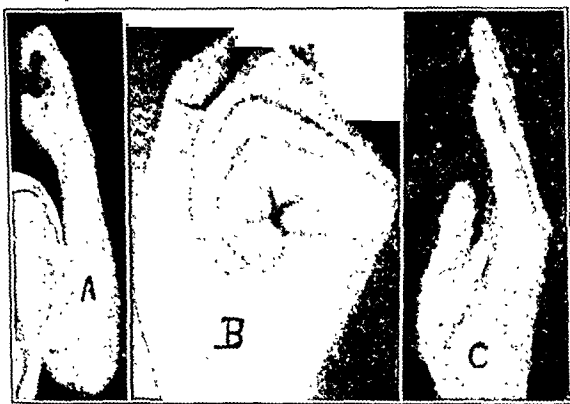


Fig. 7 (Case 8).—A, position of hand and fingers before operation; B and C, flexion and extension eight weeks after operation.

taken from the side of the wrist. When this cannot be accomplished, the point of union or approximation should be surrounded by egg membrane to prevent tendon agglutination, or a free fat flap should be transplanted into the space. When the sutures are tied and the tendons replaced, a portion of the tendon sheaths or the fascia and fat from the inner or outer side of the forearm should be swung in between the tendon groups and sutured, so that each tendon will lie in its separate compartment. Unless this is done, the tendons will become fixed to each other transversely, and the muscles will move as a *group* in place of *individually*. This tendon elongation is ideal in its results, if one attains asepsis and has some muscle cells remaining to contract when the tendon is elongated.

The *division of the joint capsule* associated with elongation of tendons does not receive sufficient attention in the literature on the subject. It is necessary if a permanently good result is to be obtained. After prolonged contractions in the neighborhood of the elbow, even after the biceps tendon has been elongated, the forearm may not come down into a position of extension until the anterior capsule of the joint is divided. After this is done the arm can be forced down gently, and sometimes it drops down, without any previous stretching of the brachialis anticus. If resort is had to stretching, care must be observed not to injure vessels and nerves. Occasionally a complete paralysis of the muscles of the forearm has been produced by injudicious stretching, which has caused an injury or trauma of the musculospiral, median and ulnar nerves. This paralysis is due to a suspension of transmission of nerve impulses in the axons by what I believe to be an edema consequent on the stretching. It disappears in from two weeks to four months, and in every case of the kind which I have seen the function of the muscles was completely restored. Failure to divide the joint capsule is the most common cause of failure in this class of cases (Case 2).

If the anterior or posterior group of tendons, that is, the superficial or deep flexors, are contracted to such a degree and fixed to the bone, that a plastic operation cannot be performed, then the operation of excision of a section of the bones of the forearm should be resorted to, so as to shorten the forearm and the muscles and tendons are then at the same time placed under favorable conditions for mobility. A fat and fascia flap should be interposed between the muscles, tendons and the bone to prevent the recurrence of the adhesions. If pedicled flaps cannot be obtained from the tissue around the seat of operation, then the fascia lata of the trochanteric region always affords an ample supply of tissue for this purpose. We have used such detached flaps of fat and fascia in a number of cases for various purposes; it has always healed in and we have been well satisfied with the result. It is essential that the periosteum and the skin should not become attached to the line of the new union of the muscles or tendons, as these fixations are a great impairment to motion in subsequent muscular contractions and relaxations. It is of the greatest importance that superlative asepsis be attained by never touching any of the tissues with the gloved hand. The skin is closed with a subdermal catgut stitch and a horse-hair dermal stitch.

As to the after-treatment of these cases: The arm is dressed in a wire cage splint, placed on the dorsal surface of the forearm and hand, with the wrist in hyperextension and the fingers straight. The arm is kept elevated on a pillow, so as to prevent edema in the forearm and the area operated on. The fingers are watched daily—in fact, hourly—and on the slightest complaint of pain on the part of the patient, or of the appearance of a swelling of the fingers, the bandage is loosened. The stitches are removed on the tenth or twelfth day, and the patient is encouraged to flex and extend the fingers as often as possible. We have not had a single case in which the result was

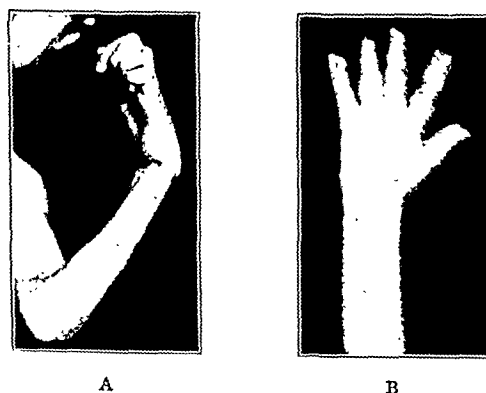


Fig. 8 (Case 9).—A, position of hand and fingers before operation; B, degree of extension six weeks after operation. (Flexion was also nearly normal, but the photograph was so blurred as to make it worthless for printing.)

otherwise than as expected—that is, the patient regained practically full power of flexion and extension. Voluntary motion should be attempted after the tenth to fifteenth day, depending on the age of the patient. It should never be forced to the degree of causing severe pain. Gentle transverse massage may be used to advantage. It often takes months to develop contraction sufficient to give full range of motion in the muscles.

CONCLUSIONS

1. The contracted wrist is always a sequence of cicatricial contraction following myositis.
2. The myositis is of pressure or infiltration origin or acute edema or hemorrhage.
3. The drop wrist is of nerve origin.
4. The extensors are rarely involved in these cases, though we have seen two of positive splint pressure origin.
5. The prophylactic treatment gives excellent results, and should always be resorted to immediately on the manifestation of the pain, swelling and cyanosis syndrome of symptoms.
6. The early tenoplasty is the ideal operation, when the disease is fully developed.
7. Capsulotomy should never be overlooked in the proper cases.
8. Resection of the bones is admissible in cases not amenable to tenoplasty.
9. The operation should be performed as soon as the acute symptoms have fully subsided, three to four months after the accident.
10. Correction of malunion should be instituted before the tenoplasty operation.

REPORT OF CASES

The following is an abstract of a few illustrative cases:

CASE 1.—Man, aged 24, sixteen years previously had fractured the left radius at the junction of the lower and middle thirds. The fracture was reduced and anterior and posterior splints were applied and left on for five or six weeks. In the course of the next few months the patient noted an increasing inability to extend the fingers. Various attempts at forcible extension failed to relieve the condition. The flexor tendon of the little finger was elongated and the ulnar and median nerves

had been exposed and freed but without any result. On admission to the hospital the patient had a typical Volkmann's contracture; the muscles reacted to voluntary impulses and the faradic current, showing that there was no motor neuron lesion. In November, 1902, all the flexor tendons were lengthened from $1\frac{1}{4}$ to $2\frac{3}{4}$ inches with good result. One year later a second additional lengthening was made and was followed by a perfect result. The patient is a surgeon and his hand is as good as its fellow.

CASE 2.—Man, aged 19, sustained a fracture of the left arm near the elbow ten years previously. A plaster cast was applied with the arm flexed to a right angle at the elbow. During the six weeks the cast was on, the patient had great pain in the forearm with enormous swelling of the hand and fingers. When the cast was removed the arm was flexed at a right angle and there was only 1 inch range of motion in the elbow. The wrist was flexed and the fingers contracted on the palm with great atrophy of the muscles of the forearm and arm. The muscles reacted to the faradic current. The treatment in this case (June, 1909) consisted of elongation of the biceps tendon and as this failed to increase the motion materially, the anterior portion of the joint capsule was divided transversely, immediately restoring a full range of extension. Four weeks later all the flexor tendons of the

forearm were elongated from $1\frac{1}{2}$ to $2\frac{3}{4}$ inches and the anterior capsule of the wrist joint was divided transversely. The result was complete restoration of motion. The patient now is a good amateur pianist (Fig. 3).

CASE 3.—Woman, aged 26, sustained a simple Colles' fracture with subsequent infection of the skin wound, which discharged pus for eight weeks and then sloughed over an area of about 4 inches square. The result was a stiff wrist and contracted fingers. Massage and electricity failed to give relief. Inquiry elicited the information that the forearm had been dressed with an anterior wood splint, causing much pain and swelling of the hand. Ten days later an abscess just above the wrist was opened and then followed the long period of pus discharge and sloughing of the skin. The flexor tendons were found adherent to the bone in a mass and were dissected free and lengthened for from 2 to 3 inches. A pedicled flap of fat and fascia was placed between the tendons and the bone. The result was eminently satisfactory. The patient regained a normal range of motion and resumed her professional work on the stage as a harpist (Fig. 4).

CASE 4.—Patient, aged 5, sustained a fracture of the elbow-joint. A circular plaster cast was applied with the arm flexed to a right angle. The following morning the hand and forearm were swollen and at the end of forty-eight hours the child was suffering excruciating pain. The hand was cyanotic. When the cast was removed six weeks later, the elbow-joint was fixed in flexion, and the fingers were flexed into the palm of the hand. Tenoplasty was done on the flexor tendons with good result.

CASE 8.—Man, aged 24, sustained a fracture of the olecranon. The following day the fracture was reduced and the arm was wrapped in an adhesive-plaster cast extending from the thumb up to the middle of the arm, with the elbow in full flexion. The hand soon began to swell and became so painful that four or five days later the adhesive was cut, except for a distance of 4 inches directly over the wrist. When the adhesive was entirely removed, three weeks later, the hand was stiff and swollen. The fingers were flexed and could not be extended without assistance. The degree of flexion increased. We performed the usual tenoplasty with a good result (Fig. 7).

CASE 9.—Patient, aged 11, sustained a supracondylar fracture of the humerus. After reduction of the fracture, a metal right-angle splint was adjusted to the inner side of the arm and secured in place with a roller bandage. As soon as the boy regained consciousness he complained of pain in the arm, which increased in severity and was shortly followed by swelling of the hand. Eighteen hours after the injury the hand was considerably swollen. Not until the third day were the bandages loosened. The splint was left on four weeks and then the patient could not flex or extend his forearm fully, the fingers were drawn into the palm of the hand and he was unable to extend them. At the first operation which we performed a projecting fragment of bone was removed from the anterior surface of the humerus to restore normal elbow motion. The result was perfect. At the second operation the flexor tendons of the forearm were elongated $1\frac{1}{2}$ inches. The full normal range of motion was restored (Fig. 8).

ABSTRACT OF DISCUSSION

DR. ERNEST LAPLACE, Philadelphia: The better understanding of fractures must be based on pathology. A fracture is necessarily attended by hemorrhage which infiltrates the tissues. We cannot hope that this will disappear without leaving some fibrin or hematin infiltrating the histologic elements of the parts. If the surgeon undertakes the treatment of a fracture, as a plumber solders a bit of lead pipe, without regard to the soft structures, then he fails signally. There is no routine treatment of fractures. Due attention must be given to the swelling and to the local histologic injury in the individual case, that the ultimate result may be attended with the least impairment of function. Therefore, whether splints, plaster-of-Paris casts or any other method be resorted



Fig. 9 (Case 11).—Position of hand and fingers before operation. With the wrist flexed the fingers are well extended.

to, the result must not be lost sight of. There is no post-haste in the treatment of the fracture itself. Attention should, however, be given to the soft structures that these may be relieved from their traumatism as soon as possible. This is especially true in children in whom it has been demonstrated that even if the immediate union be not at first creditable, time will readjust the fractured ends with remarkable precision as Kummell has shown in a large series of cases by Roentgen-ray demonstration. When fractures are forcibly put into casts or subjected to undue pressure at the time of the first dressing, such injury may result to the soft structures as may lead to permanent contraction and other impairment of function.

DR. DEAN LEWIS, Chicago: An ischemic contracture is one of the most serious sequences of a fracture. A thorough understanding of the causes underlying the development of contractures of this type is necessary before a rational therapy can be applied or an improper one avoided. Ischemic contractures follow most often fractures about the elbow and knee, and in the majority of cases the line of fracture passes through the lower end of the humerus or femur. The anatomic relations about these points favor the development of ischemic contractures. The antecubital fossa is covered by a dense fascia, as is also the popliteal fossa. Related to each fossa are large venous trunks which can easily be compressed by a hematoma developing beneath the fascia. The displaced fragment of the fractured bone often lies in such a position that it compresses the main artery of the extremity. Compression by the fragment and pressure of the hematoma beneath the resistant fascia may cause an ischemia or a venous congestion either of which continued long enough will result in muscle degeneration followed by contractures. The sub-fascial hematoma also interferes with, or prevents the development of a collateral circulation, in those cases in which the main artery is compressed by the fragment. It is undoubtedly true that most cases of ischemic contractures follow the application of constricting bandages, but it should also be remembered that statistics indicate that ischemic contractures follow fractures even when no dressing has been applied. Bardenheuer, who I believe has made the greatest contribution to this subject, has stated that about 8 per cent. of the contractures follow fractures which have had no dressing applied and in which no attempt at reduction has been made. We should remember that a supracondylar fracture unattended to for twenty-four hours may develop contractures in spite of the fact that proper treatment has been applied when seen by the surgeon, and that the damage has already been done, because of the indifference or neglect of the patient. In some cases active means should be resorted to. The fascia covering the antecubital fossa should be incised to remove the hematoma, and the projecting fragment of bone should be replaced to prevent pressure on the main vessel. We are indebted to Dr. Murphy for emphasizing the etiologic rôle of the surgeon in these cases and for outlining so clearly the methods by which this most distressing sequel can be avoided.

MR. HAROLD COLLINSON, Leeds, England: I will, briefly, emphasize what Dr. Lewis has said. I would ask Dr. Murphy whether the ischemic contraction of the forearm was not occasionally merely the result of the extravasation of the blood between the muscular bellies in the upper portion of the forearm. In illustration of this the most striking case of ischemic contracture that I have ever seen was in a small boy who fractured the lower end of his humerus and was under my own care from the very start. He had a great amount of hemorrhage around the elbow-joint and was treated in bed with the arm raised and flexed at an angle of about 120 degrees. He was watched carefully and within twenty-four hours developed ulcers over the tongue and in the index fingers. No splint was ever applied to the arm at any time and in the next month he developed a very marked degree of Volkmann's contracture. Fortunately, it was treated early by massage and movements and he has now a comparatively useful forearm, but it struck me that it was possible in a

certain proportion of cases for this condition to arise independent of any treatment. Possibly if some more active treatment had been undertaken in these cases we might have had a better result, but I think not. With regard to the treatment of these late cases it has been my misfortune to have some of these cases, and they are, I am afraid, in my experience, a little more discouraging than they appear to Dr. Murphy. In a case in which the muscular bellies are converted into a hard cicatricial mass, the lengthening of all the tendons of the forearm, which I have undertaken in a certain number of these cases, has been productive of what we call a good result in only a small proportion. It occurs in the late neglected cases that the muscular bellies have lost all power of contraction and while one is able to get the fingers straight with the wrist extended, the amount of use in these fingers, so far as flexion is concerned, is in a certain proportion of cases rather disappointing. I have never undertaken the shortening of the bones of the forearm, but I was hoping that Dr. Murphy when he again talked would be able to tell us of some rather more intelligent treatment than this which I have up to the present undertaken.

DR. JOHN B. MURPHY, Chicago: I mentioned in my paper the three etiologic factors in the production of myositis—the pressure from the splint, the pressure of flexion, and the pressure of the hemorrhage and effusion beneath the aponeurosis in connection with the trauma. The most common cause is pressure from the splint. I have a beautiful case now, from the pathologic point of view, illustrating the point brought out by Mr. Collinson—an arthroplasty in which the patient had a hemorrhage extending down the forearm beneath the fascia, forming a clot there and producing a suspension of muscular contraction within the first eight hours. On examination I found that the blood had passed beneath the aponeurosis and had compressed the muscle. Another matter which was not mentioned in my verbal discussion of the treatment is that when the skin becomes tense, shiny and feels woody, the open incision should be resorted to, and thus free the tension on the blood-clot that is forming and prevent the hemorrhage, necrosis or myositis. This is the proper treatment in this condition, but it must be immediate if good results are to obtain. When there is a large transudate under the muscular aponeurosis, and the tension is severe, subcutaneous division of the aponeurosis is indicated. I thank Dr. Laplace for accentuating the essential factor of the avoidance of trauma in the early or after-management of these fractures. One does not have to fix the bone in its proper position at once; one can wait until the edema and swelling have materially subsided. Above all, however, your morning prayer when treating these cases should include "Deliver me this day from executing passive motion in a recent fracture of the elbow-joint, when that passive motion causes the patient severe pain," as it increases the callous, the connective-tissue formation, the tendency to fixation, and adds to the trauma which is already superlative in that area.

The Ancient Practitioner.—The high esteem in which the physician was held is proved by the beautiful words of Jesus, the son of Sirach (180 B.C.), Ecclesiasticus (R.V.), chapter xxxviii:

"1. Honor a physician according to thy need of him with the honours due unto him:

For verily the Lord hath created him.

2. For from the Most High cometh healing:

And from the King he shall receive a gift.

3. The skill of the physician shall lift up his head:

And in the sight of great men he shall be admired.

4. The Lord created medicines out of the earth;

And a prudent man will have no disgust at them.

5. Was not water made sweet with wood,

That the virtue thereof might be known?

6. And he gave men skill,

That they might be glorified in his marvellous work."

—Neuburger, *History of Medicine*.

THE RODMAN OPERATION FOR BREAST
CANCER*DONALD GUTHRIE, M.D.
SAYRE, PA.

Rodman in 1908 described an operation for the radical treatment of breast cancer which embraces the

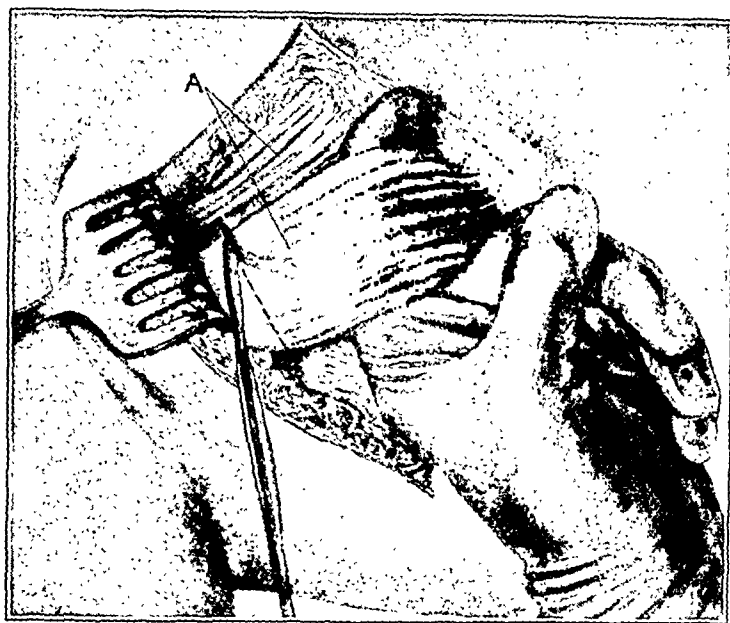


Fig. 1.—A, pectoralis major muscle.

good features of the most approved and accepted methods.

In the past three and one-half years, my associate, S. D. Molyneux, and myself, have operated in 117 breast cases. Of this number 79 had the radical



Fig. 2.—A, pectoralis major muscle; B, acromioclavicular artery; C, pectoralis major (clavicular portion); D, pectoralis minor muscle; E, long thoracic artery.

operation, 77 for carcinoma, 1 for sarcoma, and 1 for tuberculosis, and in 74 instances we used the Rodman operation. This number of cases is far too small, and the length of time since operation too short, to justify

any conclusions about results; still we have employed the operation frequently enough to be impressed with the good points, and believe it to be one of the best radical operations.

Rodman emphasizes the importance of a primary axillary dissection, because by working from the axilla instead of toward it the danger of expressing cancer-cells into the adjacent tissues is avoided.

Often it is very important to inspect the extent of axillary involvement before it can be decided whether or not a complete operation is justifiable. The late S. W. Gross called attention to this thirty-five years ago. Judd, in a late paper, points this out, and believes that many advanced cases would not be subjected to the radical operation if the extent of axillary involvement was first determined.

Willy Meyer first practiced and advocated ligating the axillary vessels at their point of origin to lessen the amount of hemorrhage. More blood is lost in any type of operation which attacks the breast first, instead of the axilla, because the same vessels are cut across



Fig. 3.—A, pectoralis major muscle; B, pectoralis minor; C, pectoralis major (clavicular portion); D, acromioclavicular artery; E, long thoracic artery and vein; F, nerve of Bell; G, alar thoracic artery and vein; H, subscapular artery, vein and nerve.

several times in working toward their points of origin.

Long exposure of a large denuded area of the chest, which occurs in operations that work from sternum to axilla, tends to produce shock. With lessened hemorrhage the time of operation is shortened, and shock is minimized.

Rodman's primary incision is a straight one, beginning one inch below the clavicle, two fingers' breadth from and parallel to the sulcus, between the deltoid and pectoralis major muscles. An incision extending on the arm frequently forms a cicatrix, which limits the range of motion of the arm, and at times causes edema. Our patients have had splendid use of the arm after operation.

The axilla is exposed by severing the tendons of the pectoralis major and minor muscles at their insertions. As a rule, the clavicular portion of the pectoralis major is not removed, unless the growth is in the upper outer quadrant of the breast (Fig. 1). The acromioclavicular and the long thoracic arteries run

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

parallel (above and below, respectively), to the tendon of the pectoralis minor muscle, and should not be injured during this step of the operation (Fig. 2). By cutting the costocoracoid membrane, the space of Morenheim is well exposed.

The dissection of the axilla begins at the apex and extends from above downward and from within outward. As the sheath and fat are removed from the axillary vessels the acromial, long and alar thoracic,

oval should be 5 or 6 inches or more at its greatest breadth, and the incision must never come within 2 inches of the edge of the growth. The subcutaneous tissues are cut on a slant, so that the skin is everywhere undermined for a distance of several inches from the edges of the wound. Rodman and Judd practice free dissection of the superficial and deep fascia, as first advocated by Mr. Hanley, who believes that the peritoneal cavity has been invaded by the



Fig. 4.—Incision for removal of breast.

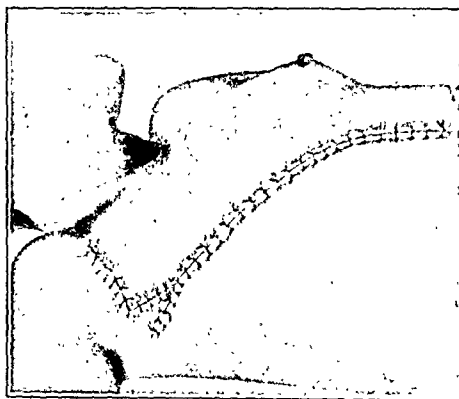


Fig. 6.—Closure of wound.

and the subscapularis branches of the axillary artery are encountered in the order named (Fig. 3). These, with their accompanying veins, are cut, and the proximal ends ligated. No attempt should be made to remove individual enlarged glands. The contents of the axilla should be removed *en masse*, as a gland-bearing fascia. When this dissection has been completed nothing is left on the inner aspect of the axilla

permeation of cancer-cells along fascial planes, the rectus particularly.

While a large amount of skin, equidistant in all directions, must be removed, it is rare that skin-grafting ever becomes necessary to close the wound. Judd showed that recurrences in the skin occur more frequently in cases in which a large amount of skin had been removed, but the fascia underneath saved, than when less skin was taken and a very free dissection of the superficial and deep fascias was made. He believes that skin nodules are developed from extension along the lymphatics in the fascia, and not from those in the skin itself, and urges a wide dissection of the superficial and deep fascia, beginning in the axilla, extending down over, and including the pectoral muscles from the sternum outward over the muscles of the back and downward, including the fascia of both recti (Fig. 5).

Rodman advises exploring the supraclavicular glands by a separate incision, if the growth is situated in the upper hemisphere of the breast, or if the axillary glands are badly involved. It is our custom to consider cases inoperable if section of the supraclavicular glands should show cancer involvement, for we believe that internal metastasis has already occurred.

We have a large wound to close; on the chest, the cut ends of the pectoral muscles and the intercostals are exposed, below, the external oblique and recti, posteriorly, the latissimus dorsi, the teres major and subscapularis muscle, and long subscapular nerve, the inner aspect of the axilla, the nerve of Bell, and the digitations of the serratus magnus muscle.

Closure of the wound is begun where it was started, near the clavicle. Closure of the oval is begun at the sternal end. After advancing one-third of the dis-

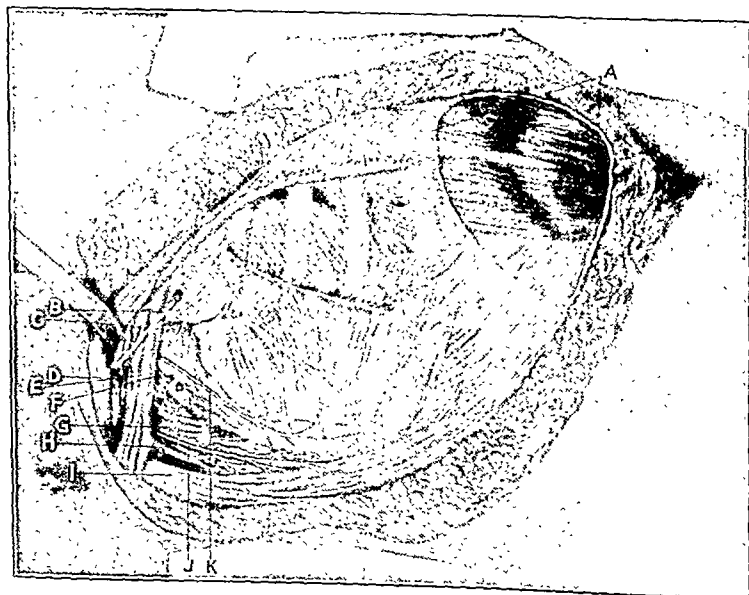


Fig. 5.—A, sheath of rectus muscles; B, acromiothoracic artery; C, long thoracic artery; D, pectoralis major (clavicular portion); E, axillary vein; F, alar thoracic artery; G, subscapular muscle; H, subscapular artery and vein; I, latissimus dorsi muscle; J, subscapular nerve; K, nerve of Bell.

but the posterior thoracic, or nerve of Bell, and posteriorly the long, subscapular nerve.

The breast is removed by an incision beginning at the middle of the primary incision, encircling the breast, and extending downward to a point midway between the ensiform and umbilicus (Fig. 4). The

tance it can be determined if the flaps can be approximated readily. If this is impossible, the axillary portion of the large wound is closed, advancing one-third of the distance. The central one-third, which cannot be approximated, is covered by Thiersch grafts, taken from the thigh (Fig. 6).

We do not employ drainage, except in fleshy persons or when there has been any undue amount of trauma, and we rarely are troubled by serum. Since leaving the sternal ends of the pectoralis major and minor, as advocated by Rodman lately, the flaps adhere readily to the chest wall, and dead space is better obliterated. The arm is released after twenty-four hours, and passive motion and massage begun early (Fig. 7).

I am glad to report that patients with breast tumors are coming to us much earlier for consultation than a



Fig. 7.—Function of arms, after double operation.

few years ago. The percentage of operations for benign tumors has increased very much and we see fewer inoperable cancers of the breast.

CANCER VACCINE AND ANTICANCER GLOBULINS AS AN AID IN THE SURGICAL TREATMENT OF MALIGNANCY*

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DETROIT

During the past six years I have devoted considerable time to the study of specific cancer therapy, and various phases of these investigations have been published from time to time as definite facts of scientific interest were obtained. The work is based on the theory¹ first published in 1910, which states that

through altered chemical nature the normal tissue-cell changes into the malignant cell.

If a malignant cell is chemically different in its protein content from a normal tissue-cell it should be possible to sensitize an animal to one protein and not the other. That this is the case has been proved and it has also elicited knowledge concerning a new and extremely interesting form of sensitization to which has been given the term "transitory sensitization."

Formerly I have purposely refrained from mentioning the therapeutic results obtained in these investigations in the belief that at least from three to five years should elapse before any correct judgment could be obtained. Now, however, sufficient time has passed and I believe that the results are of enough value to publish a detailed report. With regard to the therapeutic application of specific therapy I will limit the report to the first one hundred cases. This is done because of the fact that in this group all cases under consideration will be such as have been under observation from at least one to six years. The results obtained since then have been more gratifying and the improvements in technic will be mentioned, but the cases have not been under observation long enough to justify definite conclusions.

The scientific portion of the work is a correlation, for the most part, of work previously published and only reference to this will be given. The theory on which this work has been done is given in "Protein Split Products," Chapter XIV.

In the early part of 1910 I first began the injection of serum obtained from sheep and rabbits, when their large mononuclear count was highest, after sensitization to cancer protein, in cases of human carcinoma and sarcoma. Previously I had employed such serums in mouse carcinoma and, while retrogression and disappearance of many mouse tumors was observed, yet, with the strain in my possession, the number of spontaneous recoveries among controls was so great that conclusive records could not be drawn. It is interesting, however, to note that Abderhalden² has recently reported favorably on the use of such a serum in rat sarcoma. His serum was obtained twenty-four hours after the injection of the sensitizing dose, which is the time that the increase in large mononuclear cells is usually highest and his report is a gratifying confirmation of my work.

As stated above and previously published,³ however, injections of both rabbit- and sheep-serum from animals sensitized were given in twelve inoperable or recurrent cases.

Of these twelve cases eight were given rabbit-serum and four, sheep-serum. Injections of from 1 to 5 c.c. were made every second or third day. Of the cases treated with sheep-serum one became sensitized after three weeks and two others developed an acute nephritis. Of the eight given rabbit-serum, four developed an acute nephritis with blood and albumin in the urine at the end of four weeks. While in all cases there was improvement in the condition of the malignant growth, yet the use of the serum was discontinued, since in over 50 per cent. of the cases in which it was tried, the serum complications rendered it impracticable. While I now realize that the initial doses of

2. Abderhalden, E.: Influence on Rat Tumors of Serum Containing Ferments Protecting Against Some of the Tumor Elements, *Med. Klin.*, Berlin, Feb. 9, 1914, p. 183.

3. Vaughan, J. W.: Blood Changes Caused by the Hypodermic Administration of the Cancer Proteid, *THE JOURNAL A. M. A.*, Nov. 16, 1912, p. 1764.

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Vaughan, J. W.: Some Modern Ideas of Cancer, *THE JOURNAL A. M. A.*, May 7, 1910, p. 1510.

serum were much too small, yet I am fully satisfied from my own experience that a prepared serum as suggested by Abderhalden will never be of practical value in advanced cases, not only because of the danger of the serum as a vehicle for the ferment, but also for other reasons that I will mention later. It is of particular interest to note, however, that, in this series of twelve cases, those in which the kidneys attempted to take care of the foreign serum, developed acute nephritis, while those in which the body cells split up the serum for subsequent elimination became serum sensitized.

If the use of the serum containing the specific ferment is contra-indicated, and I believe that my cases have shown this to be true, the next step was to ascertain whether the specific ferment could be obtained free from the undesirable serum proteins.

For this purpose an attempt was made to remove the ferment from the large mononuclear leukocytes. That this can be done is shown in previously published work⁴ and the final product has been given the name of anticancer globulins. It must be understood, however, that even in this form our ferment is in a far from purified state.

It has been customary to test the activity of each batch of globulins by mixing 10 c.c. of a 1 per cent. solution with 5 c.c. of 2 per cent. cancer vaccine, incubating one hour and injecting intravenously into normal rabbits. While this is usually fatal, yet there may be a wide variation in the amount of poison liberated, consequently we have never been able satisfactorily to standardize the ferment.

In the following report of cases the term vaccine will be given to cover the number of injections of both cancer-cell vaccine and cancer residue, while the term ferment will include serum, unfiltered leukocyte extract, filtered leukocyte extract, globulins and in a few cases the leukocytes *in toto*. For the exact meaning of these preparations see "Protein Split Products in Relation to Immunity and Disease," chapter XIV. This grouping under one head is done for the sake of brevity, as a more detailed report would occupy too much space as well as because the active principle under each head is the same.

The method of administration, whether subcutaneous, intravenous, or intraperitoneal will not be designated but the general conclusions of several hundred injections by each method will be considered altogether.

REPORT OF CASES

CASE 1.—Mr. C. Inoperable epithelioma of the palate and cheek. First seen Sept. 2, 1909. Patient received 20 injections of vaccine. Slight temporary improvement following first three injections, followed by steady advance of the disease. Patient died about two months after discontinuing injections.

CASE 2.—Miss B. Epithelioma of arm. First seen Oct. 7, 1909. Patient received 30 injections of vaccine and 15 of ferment. This patient had been previously operated on three times. The epithelioma had progressed until complete absorption of the humerus had taken place for a distance of 6 inches. About one-half of the injections were given before amputation and one-half after. Following the second injection of sensitized leukocytes, which would equal about 90 mg. of globulin, the patient reacted severely. There was loss of consciousness, subnormal temperature and pulse around 140 for three days. During this time the wound cleaned up with marked rapidity and good granulation tissue appeared. After recovery from this severe intoxication caused by

liberation of the cancer poison amputation was done. The patient is still alive and without recurrence.

CASE 3.—Mr. D. Recurrent carcinoma of the cheek and lymph-glands. Secondary to lip carcinoma. Seen March 3, 1910. Has received 25 injections of vaccine and 48 of ferment. Patient is living and without recurrence.

CASE 4.—Mr. H. Recurrent epithelioma of ear, following two weeks after radical removal. First seen Oct. 1, 1910. Patient was given 8 injections of residue. Growth disappeared and has not returned to date.

CASE 5.—Mr. W. Recurrent carcinoma of tongue and floor of mouth. First seen Nov. 6, 1910. Patient was given 10 injections of vaccine. No improvement and patient died while under treatment.

CASE 6.—Mrs. F. Recurrent carcinoma of breast. First seen April 7, 1912. Radical removal and second removal of recurrent nodule, had been performed previously. Patient given 10 injections of vaccine and 70 of ferment. Patient still living with recurrence.

CASE 7.—Mrs. C. Recurrent carcinoma of the breast following radical removal. First seen Nov. 28, 1910. Patient given 18 injections of vaccine. Patient still living without recurrence.

CASE 8.—Mrs. E. Endothelioma of eyelid. Slight recurrence following operation two weeks previous. Patient first seen April 9, 1912. Given 2 injections of vaccine and 16 of ferment. Still living without recurrence.

CASE 9.—Mrs. G. Recurrent carcinoma of the breast following radical removal. First seen Nov. 30, 1910. Patient given 34 injections of vaccine and 15 of ferment. Temporary improvement for first six months followed by steady progress of the disease. Patient died from lung metastasis.

CASE 10.—Mr. B. Recurrent breast carcinoma following radical removal. Patient given 35 injections of vaccine, 31 of ferment. Patient died while under treatment.

CASE 11.—Mr. S. Recurrent sarcoma of back following operation. First seen Jan. 1, 1911. Recurrence disappeared entirely after six injections of vaccine. Injections were discontinued for three months when there was an axillary gland recurrence. Then given 6 injections of vaccine and 12 of ferment, and axillary removal attempted. Patient died while under treatment.

This last case is of special interest because of the fact that every evidence of tumor disappeared under vaccine injections only again to reappear in more malignant form. During the injections of globulins on three different occasions injections were made directly into the tumor. Each time that this was done, within from one to five minutes the patient would complain of difficult breathing, which was followed by all the symptoms of protein sensitization. This would be followed by a period of rest of from fifteen minutes to one-half hour after which a severe chill would appear and the temperature would rise to 104 or 106. This would last from one to two hours after which the condition would return to normal with the exception that the patient would complain of weakness for three or four days.

These findings are extremely instructive as they show the specificity of the ferment, especially as such symptoms appear only when the injection is made directly into the tumor. As a rule when the ferment is injected subcutaneously there is no reaction on the part of the patient, unless the dosage is extremely large. When the intravenous method is employed there frequently follows a chill about one-half hour after injection, which is followed by a considerable rise in temperature, but never are typical sensitization symptoms observed. A discussion of the respective merits of these various methods of introduction of the ferment will be reserved, however, until the case reports are finished.

4. Vaughan, V. C.: Protein Split Products in Relation to Immunity and Disease, Philadelphia, Lea and Febiger, 1913, Chap. xiv.

CASE 12.—Mrs. B. First seen Dec. 15, 1910. Inoperable carcinoma of the rectum. Colostomy had been performed. Patient given 25 injections of vaccine and 11 of ferment. No improvement. Patient died while under treatment.

CASE 13.—Mr. B. Seen Dec. 20, 1910. Inoperable carcinoma of the rectum. Colostomy had been performed. Patient given 16 injections of vaccine. Patient died during treatment.

CASE 14.—Mr. C. Recurrent epithelioma of ear one month after operation. First seen April 21, 1912. Patient given 6 injections of vaccine and 6 of ferment. Patient living, condition not known.

CASE 15.—Mrs. D. Recurrent sarcoma of head, size of fist. First seen Dec. 23, 1910. Patient had had several injections of Coley's mixed toxins. Given 10 injections of vaccine and 7 of ferment. Patient died three months after discontinuing treatment.

CASE 16.—Mr. K. Recurrent carcinoma of glands of neck secondary to lip carcinoma. First seen April 26, 1912. This patient has had incomplete excision of the primary growth and applications of arsenious paste. Patient given 43 injections of vaccine and 154 of ferment. Radium was also used during this time. Patient living but tumor shows progression.

CASE 17.—Mrs. P. Recurrent carcinoma of the breast. First seen Jan. 6, 1911. Patient given 9 injections of vaccine. Patient died while under treatment.

CASE 18.—Mrs. S. Carcinoma of the stomach with extensive glandular involvement. First seen March 12, 1912. Radical operation performed. Patient given 1 injection of vaccine and 42 of ferment. Patient living and well.

CASE 19.—Recurrent carcinoma of the breast. First seen Jan. 20, 1911. Recurrence in opposite breast and possibly liver. Patient given 55 injections of vaccine and 91 of ferment. Patient living, apparently well.

CASE 20.—Recurrent carcinoma of the breast. First seen Feb. 1, 1911. Mediastinal recurrence. Patient given 14 injections of vaccine and 4 of ferment. Patient died during treatment.

CASE 21.—Mr. M. Small round-celled sarcoma of the leg. First seen Feb. 2, 1911. Amputation performed. Patient given 10 injections of vaccine. Patient living and well.

CASE 22.—Mrs. S. First seen March 3, 1911. Recurrent carcinoma of the breast. Patient received 36 injections of vaccine and 24 of ferment. Patient discontinued treatment, not improved.

CASE 23.—Mrs. B. Recurrent carcinoma of the breast. First seen July 1, 1911. Patient received 28 injections of vaccine and 21 of ferment. This patient improved rapidly at first. After a large dose of sensitized leukocytes, however, there was a severe reaction with temperature of 106. At the same time the recurrent nodules visible disappeared with rapidity and death resulted five days later. This is a case that evidently liberated so much of the poisonous group during the process of disintegration of malignant cells that its liberation proved fatal.

CASE 24.—Mr. E. Recurrent rectal carcinoma. March 11, 1911. Patient received 20 injections of vaccine. All signs of tumor disappeared and he discontinued treatment. This patient was not seen by me again, but I have ascertained that he had recurrence which proved fatal one year later.

CASE 25.—Mrs. L. Inoperable uterine carcinoma. March 12, 1911. Patient given 24 injections of vaccine and 8 of ferment. Patient died while under treatment. This case was advanced in type with both rectal and bladder fistulas when first seen.

CASE 26.—Mrs. G. Recurrent breast carcinoma. First seen March 25, 1911. Patient given 18 injections of vaccine and 28 of ferment. This is another case in which death was apparently brought about by too rapid liberation of the poison group by a large dose of specific ferment.

CASE 27.—Mrs. G. Inoperable carcinoma of the colon. April 27, 1911. Patient given 17 injections of vaccine and 15 of ferment. Case was very advanced when first seen and patient died while under treatment.

CASE 28.—Mrs. W. Inoperable carcinoma of the breast. First seen June 6, 1911. Patient given 13 injections of vaccine

and 8 of ferment. Patient died two months after discontinuing treatment.

CASE 29.—Mrs. B. Multiple sarcomatosis. First seen June 9, 1911. Patient given 13 injections of vaccine, 15 of ferment. Patient died while under treatment, evidently from excessive liberation of cancer protein poison.

CASE 30.—Mr. R. Recurrent epithelioma of lip. June 13, 1911. Patient received 6 injections of vaccine. Patient living without recurrence.

CASE 31.—Mrs. B. Inoperable carcinoma of the breast. June 17, 1911. Patient given 14 injections of vaccine and 19 of ferment. Slight improvement at first, followed by rapid growth of tumor. Patient died two months after discontinuing treatment.

CASE 32.—Mrs. S. Epithelioma of the face. First seen June 20, 1911. Patient given 7 injections of vaccine and 19 of ferment. Patient died while under treatment.

CASE 33.—Miss R. Recurrent carcinoma of breast with abdominal metastasis. First seen July 1, 1911. Patient given 23 injections of vaccine and 96 of ferment. Patient discontinued treatment because of severe reaction following the injection of ferment. Condition was improved at this time and the patient is still living with recurrence.

CASE 34.—Mrs. P. Inoperable carcinoma of breast with liver metastasis. First seen July 5, 1911. Patient given 21 injections of vaccine and 89 of ferment. Patient died while under treatment.

CASE 35.—Miss McA. Carcinoma of breast with axillary involvement. Patient refused operation. First seen July 18, 1911. Was given 25 injections of vaccine and 48 of ferment. All signs of tumor disappeared and patient is still living without recurrence.

CASE 36.—Mrs. T. Recurrent carcinoma of the breast. First seen August 23, 1911. Patient given 53 injections of vaccine and 66 of ferment. Patient discontinued treatment as the tumor was apparently not influenced.

CASE 37.—Mrs. S. Recurrent epithelioma vulvae. First seen August 17, 1911. Patient received 8 injections of vaccine. Recurrence disappeared and patient is still living without any signs of malignancy.

CASE 38.—Mrs. Z. Epithelioma of face. First seen Oct. 21, 1911. Patient received 7 injections of vaccine. Growth disappeared and the patient is still living without recurrence.

CASE 39.—Mr. P. Inoperable rectal carcinoma. First seen Sept. 13, 1911. Patient received 10 injections of vaccine and 56 of ferment. Patient died from hemorrhage.

CASE 40.—Mr. R. Carcinoma of the lip. Small excision for microscopic section. Refused radical operation. First seen Aug. 18, 1911. Patient given 8 injections of vaccine. Patient living without recurrence.

CASE 41.—Mr. M. Epithelioma of the face. First seen Aug. 9, 1911. Patient received 1 injection of vaccine and 3 of ferment. Patient living without recurrence.

CASE 42.—Mrs. M. Recurrent carcinoma of uterus. July 27, 1911. Patient given 25 injections of vaccine and 62 of ferment. Patient died while under treatment.

CASE 43.—Mr. H. Inoperable carcinoma of the rectum. First seen Sept. 15, 1911. Patient given 10 injections of vaccine and 15 of ferment. This is another case that apparently died from a too excessive liberation of the poison radical.

CASE 44.—Mrs. O. Carcinoma of uterus, with involvement of vaginal wall. Panhysterectomy performed, followed by slight vaginal recurrence. First seen Sept. 18, 1911. Patient given 15 injections of vaccine. Patient living without recurrence.

CASE 45.—Mr. B. Inoperable carcinoma of the tongue. First seen Sept. 22, 1911. Patient given 15 injections of vaccine and 30 of ferment. Patient died while under treatment.

CASE 46.—Mrs. McR. Inoperable carcinoma of uterus. First seen Sept. 27, 1911. Patient received 8 injections of vaccine and 15 of ferment. Patient died while under treatment.

CASE 47.—Mr. L. Recurrent rectal carcinoma. First seen Sept. 28, 1911. Patient received 10 injections of vaccine and 78 of ferment. Treatment discontinued after apparent disappearance of tumor. Present condition not known.

CASE 48.—Mr. C. Inoperable carcinoma of jaw. First seen Sept. 30, 1911. Patient received 12 injections of vaccine and 15 of ferment. Patient died while under treatment.

CASE 49.—Mrs. F. Recurrent carcinoma of breast. First seen Oct. 6, 1911. Patient received 15 injections of vaccine and 6 of ferment, with considerable improvement. Treatment was discontinued in order to try colloidal copper. It has been ascertained that the patient died while under this treatment.

CASE 50.—Mr. S. Inoperable sarcoma of the neck. First seen Oct. 24, 1911. Patient received 14 injections of vaccine and 12 of ferment. Patient died while under treatment.

CASE 51.—Mrs. K. Inoperable carcinoma of stomach. First seen Oct. 31, 1911. Patient received 5 injections of vaccine and 6 of ferment. Patient died while under treatment.

CASE 52.—Mrs. K. Carcinoma of breast. First seen Oct. 31, 1911. As complete removal as possible was performed. The tumor was the size of the patient's two fists with axillary and supraclavicular involvement. Patient received 10 injections of vaccine and 29 of ferment. Patient still living without recurrence.

CASE 53.—Mrs. W. Inoperable carcinoma of the breast. First seen Nov. 3, 1911. Patient received 11 injections of vaccine and 22 of ferment. Patient died while under treatment.

CASE 54.—Mr. P. Carcinoma penis with inguinal involvement. First seen Oct. 5, 1911. Patient received 40 injections of vaccine and 152 of ferment. After 10 injections of vaccine total ablation of external genitals was performed. Patient living without recurrence.

CASE 55.—Mr. S. First seen Nov. 10, 1911. Recurrent sarcoma of the neck. Patient received 13 injections of vaccine and 36 of ferment. Patient died while under treatment.

CASE 56.—Mrs. M. General carcinomatosis following radical removal of carcinoma of breast. First seen Nov. 21, 1911. Patient has received 33 injections of vaccine and 100 of ferment. This patient had metastasis in ileum, vertebra, lungs, inguinal glands and opposite breast, and when first seen was confined to her bed, the slightest movement of which would bring on severe pain. At present the recurrent areas are much diminished. The patient has twice traveled from Michigan to Oregon in comparative comfort, takes daily automobile rides and is much improved.

CASE 57.—Miss C. Recurrent in supraclavicular glands following radical breast removal. First seen March 19, 1912. Patient received 7 injections of vaccine and 66 of ferment. Patient living without recurrence.

CASE 58.—Mrs. B. Inoperable uterine carcinoma. Jan. 4, 1912. Patient received 8 injections of vaccine and 33 of ferment. Patient died while under treatment.

CASE 59.—Mr. G. Recurrent sarcoma of leg. First seen Jan. 15, 1912. Recurrence was excised. Patient given 3 injections of vaccine and 9 of ferment. Patient living without recurrence.

CASE 60.—Mrs. M. Recurrent carcinoma of the breast. First seen Jan. 28, 1912. Patient given 6 injections of vaccine and 51 of ferment. This patient died apparently from a too rapid liberation of cancer-protein poison.

CASE 61.—Mr. P. Recurrent carcinoma of cheek. First seen Feb. 7, 1912. Patient received 10 injections of vaccine and 45 of ferment. Patient died while under treatment.

CASE 62.—Mr. T. Inoperable carcinoma of the esophagus. First seen May 8, 1912. On account of inability to swallow either fluids or solids gastrostomy was performed first. Patient given 2 injections of vaccine and 95 of ferment. Patient died while under treatment.

CASE 63.—Dr. B. Recurrent carcinoma of tongue. First seen May 10, 1912. Patient given 2 injections of vaccine and 28 of ferment. Patient living without recurrence.

CASE 64.—Miss G. Carcinoma of the breast. First seen May 13, 1912. Patient given 10 injections of vaccine pre-

liminary to operation. Axillary glands were involved. Subsequently given 17 injections of vaccine and 149 of ferment. Patient living without recurrence.

CASE 65.—Mr. S. Sarcoma of the leg. First seen May 21, 1912. Patient had used Coley's Mixed Toxins, during which time he fell and fractured the leg at the site of tumor. After amputation of leg patient was given 12 injections of ferment. Patient living without recurrence.

CASE 66.—Mr. D. Recurrent carcinoma superior maxilla. First seen June 10, 1912. Patient given 6 injections of vaccine and 40 of ferment. Slight improvement, treatment discontinued because of desire of patient to try something else.

CASE 67.—Mrs. K. Inoperable carcinoma of the uterus. First seen Feb. 4, 1913. Patient given 35 injections of ferment. Patient died from hemorrhage while under treatment.

CASE 68.—Mrs. C. Carcinoma of colon. First seen June 12, 1912. Radical removal had been performed which showed glandular metastasis. Patient given 3 injections of vaccine and 21 of ferment. Patient living without recurrence.

CASE 69.—Mrs. V. Recurrent carcinoma of uterus. First seen June 15, 1912. Patient given 5 injections of vaccine and 60 of ferment. Patient died from acute urinary suppression while under treatment.

CASE 70.—Mr. V. Carcinoma of cheek. First seen May 30, 1913. Patient given 8 injections of vaccine and 17 of ferment. Patient living without recurrence.

CASE 71.—Mr. H. Extensive recurrent carcinoma of jaw. First seen Oct. 25, 1910. Patient given 50 injections of vaccine and 25 of ferment. Patient died while under treatment.

CASE 72.—Mrs. R. Carcinoma of uterus, inoperable. First seen July 16, 1912. Patient given 8 injections of vaccine and 36 of ferment. Patient died while under treatment.

CASE 73.—Mrs. C. Recurrent carcinoma of breast. First seen July 18, 1912. Patient given 5 injections of vaccine and 30 of ferment. Patient died with all the symptoms of protein poisoning.

CASE 74.—Mrs. W. Recurrent carcinoma of breast. Abdominal metastasis. First seen March 1, 1913. Patient given 25 injections of ferment. Patient died while under treatment.

CASE 75.—Mrs. S. Recurrent carcinoma of breast with liver metastasis. First seen Aug. 1, 1912. Patient given 6 injections of vaccine and 25 of ferment. Patient died five months after discontinuing treatment.

CASE 76.—Mrs. N. Recurrent carcinoma of breast. Vertebral metastasis. First seen Aug. 3, 1912. Patient given 10 injections of vaccine and 60 of ferment. Temporary improvement followed by slow progress of the disease. Patient died while under treatment.

CASE 77.—Mrs. J. Carcinoma of stomach, inoperable. First seen Feb. 24, 1913. Patient given 2 injections of ferment. Patient died apparently from rapid liberation of protein poison.

CASE 78.—Mrs. V. Recurrent uterine carcinoma. First seen Aug. 31, 1912. Patient given 21 injections of ferment. Marked temporary improvement followed by rapid progress of the disease. Patient died one month after discontinuing treatment.

CASE 79.—Mrs. P. Carcinoma of the breast. Size of two fists, with axillary involvement. First seen Feb. 24, 1913. Radical removal attempted, following which she received 19 injections of vaccine and 46 of ferment. Patient living without recurrence.

CASE 80.—Miss B. Epithelioma of head involving temporal bone, entire ear gone. First seen Sept. 2, 1912. Patient given 20 injections of vaccine and 85 of ferment. The disease is progressing slowly.

CASE 81.—Mrs. K. Recurrent carcinoma of breast. First seen Sept. 4, 1912. Patient given 19 injections of vaccine and 82 of ferment. Patient died because of rapid progress of the disease.

CASE 82.—Mr. H. Inoperable sarcoma of orbit. First seen Sept. 30, 1912. Patient given 18 injections of ferment. Rapidly growing tumor apparently brought to a standstill.

Treatment discontinued so that patient could go East for operation from which he died.

CASE 83.—Mr. P. Inoperable carcinoma of rectum. First seen Oct. 2, 1912. Colostomy performed. Patient given 36 injections of vaccine and 117 of ferment. The growth has retrogressed and the patient attends to his business. He has gained forty pounds. Is still under treatment.

CASE 84.—Mr. Von J. Inoperable carcinoma of stomach. First seen Nov. 26, 1912. Gastro-enterostomy performed because of obstruction. Patient given 25 injections of ferment. Patient died while under treatment.

CASE 85.—Miss L. Recurrent sarcoma of arm. Inoperable. First seen Dec. 5, 1912. Given 4 injections of ferment. Patient died from protein poison.

CASE 86.—Mr. B. Inoperable sarcoma superior maxilla. First seen Feb. 26, 1913. Patient given 4 injections of vaccine and 36 of ferment. Patient died from protein poison.

CASE 87.—Mr. W. Recurrent carcinoma of the rectum. First seen Dec. 7, 1912. Patient given 24 injections of vaccine and 74 of ferment. Condition progressively worse. Treatment discontinued.

CASE 88.—Mrs. B. Recurrent epithelioma of face. Patient had twice been operated on, had been treated with Roentgen ray and radium. First seen Dec. 30, 1912. Patient given 10 injections of residue and 15 of ferment, after which the area was curretted and a skin flap applied which was taken from the neck. Subsequently she has received 17 injections of vaccine and 65 of ferment. Patient living without recurrence.

CASE 89.—Dr. U. Recurrent carcinoma of tongue. Submental glands involved. First seen Feb. 25, 1913. Patient given 32 injections of vaccine and 59 of ferment. Patient living without recurrence.

CASE 90.—Mr. D. Carcinoma of cheek with extensive glandular involvement. First seen Feb. 7, 1913. Patient given 1 preliminary injection of vaccine. Radical removal attempted. Patient given 15 of vaccine and 20 of ferment. Patient living without recurrence.

CASE 91.—Mr. L. Recurrent rectal carcinoma. First seen March 12, 1913. Patient given 15 injections of vaccine and 47 of ferment. After 5 injections of vaccine and 20 of ferment, treatment was discontinued for two months and examination at this time showed recurrence which disappeared on subsequent injections.

CASE 92.—Mrs. G. Sarcoma of neck. First seen March 18, 1913. Previously treated by paste. Excision made. Patient given 3 injections of vaccine and 17 of ferment. Patient living without recurrence.

CASE 93.—Mr. S. Recurrent rectal carcinoma. First seen March 20, 1913. Patient given 27 injections of vaccine and 40 of ferment. Patient living with advancing recurrence.

CASE 94.—Mrs. S. Inoperable carcinoma of tongue. First seen March 20, 1913. Patient given 13 injections of vaccine and 43 of ferment. Patient died while under treatment.

CASE 95.—Mrs. W. Small recurrence of rectal carcinoma. First seen April 11, 1913. Patient given 12 injections of vaccine and 25 of ferment. Patient living without recurrence.

CASE 96.—Miss C. Carcinoma of breast with axillary involvement. First seen June 4, 1913. Radical removal performed. Patient given 29 injections of vaccine and 37 of ferment. Patient living without recurrence.

CASE 97.—Mrs. McD. Recurrent carcinoma of breast. Small nodule. First seen July 9, 1913. Patient given 26 injections of vaccine and 30 of ferment. Patient living without recurrence.

CASE 98.—Mrs. M. Recurrent adenocarcinoma of breast. First seen July 11, 1913. Three recurrent nodules. Patient given 27 injections of vaccine and 39 of ferment. Patient living with slight remaining hardness in one of the recurrent nodules.

CASE 99.—Mrs. S. Inoperable rectal carcinoma. First seen May 8, 1909. Patient given 12 injections of vaccine. Marked temporary improvement followed by rapid progress of the disease. Treatment discontinued.

CASE 100.—Mrs. L. Inoperable uterine carcinoma. First seen Sept. 10, 1912. Patient given 23 injections of vaccine

and 72 of ferment. Patient still under treatment with periods in which she is apparently better followed by periods of apparent advancement of the malignant process.

Of the preceding one hundred cases, 50 were inoperable or possessed such a recurrence after former operation as to be classed as inoperable. Of these cases 2 are apparently well and without recurrence, and 4 are markedly improved, which, in this division, would give 4 per cent of apparent recoveries and 8 per cent. the outcome of which is still in doubt.

The cases which showed definite recurrence, which however, was comparatively small in amount, were fourteen in number. Of these 6 are apparently well and 3 improved. There are 5 cases which show small operable lesions in which operation was refused. Of these, 4 are clinically well and 1 improved.

The advanced cases in which operation was performed in combination with specific treatment were thirty-one in number. Of these 23 or 73 per cent. are apparently well. One displayed rapid recurrence and 7 seemed to receive no benefit. All cases except one were microscopically malignant, the one case being that of breast carcinoma in which axillary involvement was present and which refused operative interference.

The study of the blood-counts made in these cases has lead to the conclusion that cases in which the percentage of large mononuclear leukocytes increases to from 10 to 20 per cent. following specific treatment, do well, while those that run a high polymorphonuclear count and in which the percentage of large mononuclear cells is not materially increased are not benefited.

We are accustomed to state that when recurrence does not occur after operation that the removal has been such that all malignant cells have been removed, and that recurrence depends on the incomplete removal of tumor cells. That such is not the case is very easily seen from the clinical course of the disease itself. Almost every malignant process has periods of retrogression or at least of stationary growth, which are in turn followed by more or less rapid progress of the disease. Such observations point to the belief that the body at times forms ferments which are antagonistic to the growth and multiplication of malignant cells, only to lose this ferment when the tumor cells begin to multiply again. That such a transitory ferment is probably present is shown by my animal experiments, by the few undisputed either temporary or apparent recoveries on record as well as by the apparent higher percentage of recoveries obtained when specific therapy is employed.

With regard to the use of either vaccine or residue it should be stated that the field in which they are of service is limited. The best results are obtained in cases in which the amount of tumor tissue present is small, and in which the differential leukocyte count of the patient shows a decided reaction following the administration of the cancer protein. Lunckenbein⁵ states that results obtained by the intravenous injection of autolyzed malignant cells in patients suffering from cancer are superior to those obtained by subcutaneous injection and, consequently, he advocates this method of procedure.

From a study of the increase in large mononuclear leukocytes following subcutaneous, intravenous and

5. Lunckenbein: Zur Behandlung Maligner Geschwülste, München. Med. Wchnschr., Jan. 6, 1914, p. 18.

intraperitoneal administration in our animals it is seen that the largest increase occurs after intraperitoneal injection, and during the past year I have used this method almost exclusively, using the intravenous only in cases in which the presence of tumor or adhesions contra-indicated intraperitoneal injections.

From a scientific point of view the higher degree of sensitization attained by this method is a most interesting and important fact since it tends to prove that the degree of sensitization obtained, to the cancer protein at least, is not dependent so much on the amount of protein introduced into the body as it is on the number of body cells that the protein comes in contact with.

When the protein is introduced subcutaneously it comes in contact with but a relatively few body cells; when introduced intravenously the number is probably considerably larger; but when one of the large body cavities is employed the number of cells that the protein comes in contact with must be enormously increased. So far I have used only cancer residue in the peritoneal cavity. I do this for two reasons, first, because as I have shown above the residue contains the sensitizing portion of the protein which is the portion desired, and secondly, I believe that with the poisonous portion removed there will be less local irritation. Thirdly, the residue is soluble in normal saline and consequently in a more divided state than an autolysate or a cell suspension, for which reason it will react more readily and also come in contact with a greater number of body cells.

A vaccine or residue is efficient only in cases which respond with a considerable increase in the percentage of large mononuclear leukocytes, and its chief use should be in operable cases in which a single intraperitoneal dose is given twenty-four hours before operation in order that the blood-stream may have present as a part of its content some specific ferment which can be available for the splitting up of malignant cells not removed and such cells as are cast into the blood or lymph-channels through the operative manipulation.

With regard to the ferment it can best be stated that all cases give evidences of marked benefit from its use during the administration of the first three or four doses, after which the ferment seems to lose its efficiency. The period during which it is active is about ten days, and subsequent injections cause but little reaction. This is easily understood if we stop to consider that the body in all probability forms an antiferment to our specific ferment which renders doses given after the formation of the antiferment inactive. This might be said to be true of any of the specific ferments now employed. As for instance, the first dose of diphtheria antitoxin is generally more efficacious than subsequent injections.

In order to overcome this difficulty a series of cases have been treated by giving from two to five doses of ferment followed by two injections of residue. This has been done because it was thought possible to use up the antiferment formed by the ferment, by the administration of the residue, inasmuch as the chemical relationship between these substances must be very close. Clinically this gives much better results in advanced inoperable cases that do not respond to any method. The dosage of globulins should be from 50 to 100 mg. and the intravenous method of administration is by far the most active.

In conclusion I would state that I do not believe that any method of specific therapy will be of much avail in cases that have large amounts of malignant tissue present. In such cases the use of large amounts of globulins may prove fatal, as in some of those reported in this series when 200 or 300 mg. were given intravenously at a time. The real value of either vaccine or ferment will be in their use in connection with operative removal in order to destroy such cells as are not removed by operation and thus reduce the percentage of recurrent cases.

It is now my practice to give intraperitoneal injection of residue twenty-four hours before operation. If the increase in large mononuclear leukocytes reaches from 15 to 25 immediately before operation, that is deemed sufficient. If this does not occur, then an intravenous injection of 100 mg. of globulins is given following the operation. In all of my cases alternate vaccine and globulin injections have been given frequently for the first six months after operation and then once a month thereafter, as by this means it is possible to see the patient frequently enough so that definite conclusions as to the progress of the case can be drawn.

Washington Arcade.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. GUTHRIE AND VAUGHAN

DR. PARKER SYMS, New York: Twenty years ago what is now known as the modern method of operating for cancer of the breast came as a distinct epoch, in the simultaneous publication by Dr. Halstead of Baltimore and Dr. Willy Meyer of New York, of operative procedures independently devised by them. These methods were based on practically the same principles and comprised the removal of the pectoral muscles with the extensive and anatomic dissection of the subclavian, axillary and subaxillary spaces, with the removal of the fat and lymphatics surrounding the breast, *en masse*. I prefer the method of Willy Meyer, because the dissection of the lymphatics and vessels is from the axilla toward the breast. It is against the current instead of with it. The dissection of course is thorough and the hemorrhage, according to this method, is minimized. Since Dr. Meyer published his procedure I have employed it without change, except that I carry the long arm of the incision, anterior to, and above the axilla. If we keep the axilla free from cicatrix, we will have the arm absolutely unlimited so far as motion is concerned. We have learned much since this epoch of modern breast surgery concerning the method and manner of dissemination and radiation of cancer. Handley's theories as to permeation of cancer cells have taken a great hold. Probably the most important work in this field was that of Harold Stiles. He demonstrated the fact that widespread undermining and dissection of the lymphatic-bearing fascia is quite as important as widespread dissection of the skin; neither is to be neglected and neither is neglected in the Rodman operation. One subject presents itself in a new light. Bloodgood has pointed out that cancer is coming to the surgeon almost as a new problem. Cases are brought to him earlier. We must determine how to treat, not only cancer, but the precancerous conditions. Most prominent among these is chronic cystic mastitis. We know that this disease results in cancer in a large percentage of cases. We are learning that the cancerous change is a matter of stage. That the evolution of chronic cystic mastitis into cancer is simply a progression; if the process is carried far enough it will definitely result in cancer. What are we to do in these cases? As yet we have no clinical evidence of the transition into cancer. If we treat these cases as embryo cancers, employing the radical operation, we shall be performing a mutilating operation unnecessary in many instances. So

far as the prevention and cure of cancer is concerned, however, we may be successful in 100 per cent. of these cases.

DR. WILLIAM L. RODMAN, Philadelphia: The method to which Dr. Guthrie is pleased to give my name is a composite procedure, all the steps not original with myself, but it is an operation which I carefully worked out on the cadaver after many years experience in cancer of the breast. I wanted to accomplish certain ends and to avoid certain embarrassments which had resulted in failure in my previous experience. I feel that I have simply brought together the good points of Halstead, Meyer, S. W. Gross, Stiles and Handley. I have kept accurate records of my private patients, every one operated on during the last sixteen years, but not of the ward patients, as it is practically impossible to follow them up. The functional result of the operation is absolutely good. The unfortunate results that I formerly had when I used skin grafting was due to the arm sticking up at a right angle, preventing movements as in dressing the hair or similar procedures. At present the patients can do anything that they could do before. As Dr. Guthrie says, the chief advantage is that the lymphatics are blocked at the axilla first and next at the epigastric triangle. Handley demonstrated that there are more metastases to the liver than anywhere else. Therefore attention must be paid to this. He showed also that the cancer cells permeate along the lines of least resistance, around the umbilicus, along the round ligament and the liver. The important thing is not to manipulate the breast at all during the operation. The last step is removal of the breast after blocking. The small amount of hemorrhage is an advantage. As to ultimate results we all know that Volkmann's original teaching of a two-year limit for non-recurrence was absolutely wrong; we further know that three years to insure a cure is also wrong, yet the three-year limit is generally accepted. I imagine that after five years the patient should be given a reasonable assurance. According to Ransohoff if the patient lives three years there is a 90 per cent. chance of non-recurrence. So that the three-year limit is a pretty good one to follow. Of the private patients that I operated on in the last fifteen years (three cases of carcinomatous mastitis should be excluded), thirteen or 28 per cent. are dead; one case was inoperable and the patient is counted as dead; 72 per cent. are living considerably more than three years after operation.

DR. JOSEPH BLOODGOOD, Baltimore: I am impressed that if the surgeon does a radical operation, a dissection *en bloc*, if possible, and tries to push out of his mind the idea of a closure of the wound, the individual results will be best. I have been brought up with the idea of a wide skin incision and skin grafting, but I have found that when a poorly trained operator makes this broad area of denuded skin he may be so impressed with its extent that his hand may be stayed in the subcutaneous dissection. Dr. Halstead did not mention the subcutaneous dissection in his earlier publications, but in my experience, and I was with him almost from the beginning, he never failed to do it, and the wide subcutaneous dissection of fat and fascia are the essential features in the operation for cancer anywhere. There should be no dispute with regard to the long incision. That incision allows wider subcutaneous dissection upward. Therefore it is necessary for the region downward, but also allows flaps that come together with less tension. To some surgeons who operate for cancer of the breast, important as the axillary dissection is, the chest-wall dissection is more important. The new and more difficult problem which is presenting itself to us to-day is not the dissection *en bloc*, not the wider dissection, not the good function of the arm, but the exploratory diagnosis of those lumps in the breast in a woman over 25 which we cannot diagnose clinically. Out of 210 cases in twenty-five years, in which the lump was removed, one woman has come back with cancer two and a half years after, showing that we were then justified in the non-mutilating operation. If, at the exploration, malignancy is determined, a complete operation follows at once. In our cases of adenocarcinoma every patient is well five years after operation

with not a single recurrence up to date. In adenocarcinoma the proper diagnosis and exploratory incision gives 100 per cent. of good results. If the proper diagnosis is not made the percentage drops under 20, showing the result of the incomplete operation. In the more malignant forms of cancer, which are 75 per cent. of all, in our exploratory incisions the worst results are 85 per cent. Therefore one may see the greater responsibility of the surgeon who operates on an apparently innocent lump in the breast as compared to the surgeon who operates on a clinically malignant cancer of the breast.

DR. WILLIAM B. COLEY, New York: There is no doubt that there is a growing interest in the treatment of cancer on biologic principles, and that any great advance in cancer therapy must come along these lines, an opinion which was strongly expressed by Mansell Moullin a year ago in his Bradshaw lecture on the biology of tumors. The two principal types of vaccine therapy that have been studied are active and passive immunization. Both methods have been extensively tested under the Huntington Cancer Research Fund of the General Memorial Hospital during the past three years by Drs. Beebe, Berkeley and Weil. The latter has made a critical review of the whole subject and while his paper has not yet been published, he kindly permits me to quote from it. He states that passive immunization, which consists in injecting cancer tissues into an animal, rests on two fundamental assumptions, the correctness of which has not yet been fully proved. The assumptions are: (1) That it is possible by the injection of cancer tissue to produce specific, immune cytolytic bodies which have the power to destroy the cancer cells; (2) that it is possible by this immune serum to destroy cancer cells in the body tissues of the patient. Active immunization, he states, rests on two similar assumptions, both fundamental, only one of which has been proved: (1) That the animal body can produce antibodies against its own tissues. (2) That these antibodies are effective in the body of the producer against its own antigenic cells. Dr. Weil states that the experimental studies as to the applicability of serum therapy, have failed absolutely to vindicate it in animals.

With regard to vaccine therapy in the human being, next to Vaughan's exhaustive paper is that of Vidal brought out three years ago at the International Congress of Cancer Research in Paris. Vidal has been working on the subject since 1905. He describes ninety-four cases, six of which he regards as cured, nineteen benefited. The patients were well from three to ten years. Vidal's method consisted in the injection of cancer material which had been saturated with a dog's antitumor serum before injection. Further, each injection was preceded by the injection of nucleic acid to produce a leukocytosis. Odier of Paris read a paper a year ago before the congress at Brussels in which he reported two remarkable results from passive immunization. Dr. Vaughan's results are certainly the most hopeful of any so far obtained from the use of any type of vaccine derived from the cancer cell. As to active immunization Dr. Weil holds that the entire literature does not show a convincing case except that observed by Stauler of Dr. Kümmell's clinic (Hamburg) in which a carcinoma of the uterus disappeared and the patient remained well for six months.

DR. M. M. LUCID, Cortland, N. Y.: Residing as I do in a city in central New York, for which the statistics of the state show the third highest mortality for cancer, it was with interest that I assisted in ascertaining the reason. The fact that the majority of cases of cancer of the breast which passed through our hands were late cases, solved the problem. That early diagnosis and radical removal with a good sharp knife in good light speaks for low mortality there can be no doubt, and the bloodless operation by tying off the vessels first from above is the operation of choice. Crile's method of axillary dissection is most commendable and insures, if possible, against recurrence. In my experience untreated cancer of the breast will almost invariably result in the death of the patient within three years. The percentage of patients that go beyond that period is so small

that it may be disregarded. That the disease is primarily, local, and therefore amenable to early and radical surgical removal, is a fact beyond dispute. Although the results shown by different surgeons vary, the highest percentage of cures is attained by those surgeons who do the complete operation as described in the Rodman procedure, which should serve as an argument in favor of the extensive removal of all tissue which can possibly be diseased. At present surgery is the only branch of medicine that can rightly hold out any hope of cure for cancer of the breast, therefore early and complete removal by the knife is the accepted and only weapon of defense by surgeons of national reputation against this disease. The early operation should be insisted on before axillary involvement, which will save four out of five. It is the incomplete operation that may properly be styled the forerunner of recurrence. The dangerous significance of the cancer problem is a subject which rarely reaches the attention of the lay mind and is only appreciated by comparatively few physicians. It is therefore of the utmost importance that every member of the medical profession carry the message to his clientèle that they may know what may be expected and what has been accomplished by surgery in curing this most common disease, especially the radical removal of breast tumors in the precancerous stage.

DR. HENRY S. WIEDER, Philadelphia: Dr. Bloodgood has, in my opinion, sounded the true keynote in the discussion of carcinoma of the breast. I think, however, that he has not gone quite far enough. He speaks especially of the small lumps found in the breasts of women over 25 and calls special attention to the necessity of diagnosis at the time of the exploratory incision. Unfortunately, as he states, a great many surgeons without previous thorough pathologic training are not capable of making a diagnosis in the more obscure cases. In addition there are still other cases which I believe defy the most capable pathologist or surgeon to make a diagnosis by simple incision without frozen section. Suspicions may be aroused as to the true condition but in some of these cases it is impossible to make an accurate diagnosis with the naked eye. I recall three cases which looked grossly like simple, benign, abnormal involution, but which, on careful gross-sectioning and examination of the most suspicious portion by frozen section, proved to be carcinoma in its incipient stage. These cases undoubtedly would have been overlooked if examined by gross-section only. Only once have I found this process to fail to reveal incipient carcinoma, as shown by a little deeper paraffin section on identically the same block of tissue as used for frozen section. In this case also a few more sections would have revealed its true nature. It was the earliest case of carcinoma of the breast I have ever seen. I therefore wish again to emphasize that in operative work on the breast, whenever possible, the surgeon should have a trained pathologist as assistant and have frozen sections made at the time of the operation.

DR. JULIUS H. JACOBSON, Toledo, O.: I believe that we can do just as complete work with such standard operations as the Kocher, Halstead and Willy Meyer operations as with the operation devised by Rodman. There is, however, one important point in favor of the Rodman operation which should decide us in our choice of methods, and that is the question of postoperative lymphedema of the arm. Dr. Rodman has stated that he observed a slight lymphedema of the arm in only one case out of the 150 operations which he has performed. In all other operations in which the incision extends over the insertion of the pectoral muscles on to the arm, postoperative lymphedema is not infrequent. I know of no complication following the radical operation for cancer of the breast which is more distressing and before which we are more hopeless. I have performed Handley's operation for the relief of this condition but without result. The operation which practically gives us no postoperative lymphedema, in my opinion, is the one we should adopt. Dr. Bloodgood has given us the keynote to the entire situation, namely, the early diagnosis of cancer of the breast. The recent advances

in the production of local anesthesia, especially with the use of Braun's technic of conduction anesthesia have given us a simple method whereby we can remove all suspicious growths of the breast and subject them to an immediate microscopic examination with the freezing microtome. In this manner we can arrive at an early diagnosis, relieving the minds of both patient and physician regarding the presence or absence of malignancy. Such cases can be taken into the hospital, the growth removed and examined, and if the condition should prove to be benign, they can leave the hospital in about two hours from the time of entry. It has been my experience that patients consent more readily to the removal of suspicious growths of the breast, when they are informed that it can be done in this manner. The method seems to me to be the best in dealing with precancerous conditions of the breast and to meet logically and squarely the problem as we see it in practical surgery to-day.

DR. DONALD GUTHRIE, Sayre, Pa.: In reply to Dr. Jacobson's question about the frequency of edema of the arm following operation, there is only one patient who showed it. The operation was done against our better judgment. The extent of Roentgen-ray involvement was sufficient to contraindicate a radical operation. There is one point I did not mention. Dr. Wainwright of Scranton gives his patients a thorough roentgenization before the flaps are closed, the idea being to destroy any cancer cells expressed from the breast. We roentgenize our patients immediately after the operation is completed and urge them to come back for treatments for at least a year afterward. With regard to the skin flap we employ a wide incision 5 or 6, or more inches at its greatest width. Since we have learned to undermine the tissues by cutting them on a slant we can close large wounds which formerly had to be skin grafted.

DR. J. W. VAUGHAN, Detroit: First, I will answer Dr. Coley's remark with reference to Dr. Weil's failure to find any specific ferment. Dr. Weil stated, at the cancer association in Washington one year ago, that it was impossible to sensitize animals to cancer protein. The reason he could not find it was that he did not look for it at the right time. He looked for it several days afterward as in ordinary sensitization. It is present twenty-four hours afterward and it disappears six hours later. Abderhalden's work mentioned in the paper corroborates this work. With regard to injections and treatment by vaccines, the results are not good, but they are better than they were. Why? Before they were given by guess work. Now they are governed by the increase in mononuclear cells. What practical value has this on the subject of when to operate in cancer? Every surgeon has operated on a little adenocarcinoma no larger than your thumbnail to find that within six months the patient has general carcinomatosis. The next may be a patient with a great big adenocarcinoma; the surgeon will operate with fear and feel sure it will recur in a few months. Why does it not recur? Because it has been operated on at the time that the blood-stream contains this specific ferment. The thing to do is to produce this specific ferment in the blood-stream before operating and then recurrences will be fewer.

Infant Mortality.—One speaks of armies being "decimated" by war; of a people being "decimated" by a pestilence, and at such conditions remains aghast at the tragedies of human existence. Yet the universe looks on unmoved at a decimation or slaughter which has been in our midst for untold generations. Under the very best conditions this destructive process amounts to simple decimation; at the worst, not merely simple but to double, triple and even quadruple decimation. This form of decimation is infant mortality, which until recent years has practically passed unnoticed. . . . A new-born child has less chance of living a week than a man of ninety, and of living a year than a man of 80. Over 3,200,000 infants less than a year old perish annually in the countries forming the civilized world, or, in other words, one infant dies in every ten seconds, every hour of the twenty-four.—Alan Brown and George Campbell, *Canadian Med. Assn. Jour.*

THE ASSOCIATION OF ERYTHEMA
NODOSUM AND TUBERCULOSIS*

O. H. FOERSTER, M.D.

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During the past few years numerous instances have been recorded by French and German observers of the association of erythema nodosum with tuberculosis, especially in childhood. It appears that in many instances an attack of erythema nodosum has been followed directly or within a short period by the development of an active tuberculous process in the lymph-glands, meninges, pleura or other structures. As long ago as 1872, Uffelmann¹ called attention to the grave significance frequently attached to erythema nodosum occurring in children of tuberculous ancestry, but not until recently has the subject again come into prominence.

The question of the etiology of erythema nodosum still awaits solution, and the views held by different writers vary widely. Regardless of whether we look on erythema nodosum as a distinct disease due to a specific micro-organism, as the cutaneous expression of a systemic disorder due to the ingestion of drugs or the absorption of toxins or as a symptom in the course of other diseases, as syphilis or tuberculosis, the large and increasing number of observations of its association with tuberculosis deserve attention.

A review of the recent literature shows that the writers are by no means in accord as to the etiologic significance of their observations. Many express themselves as convinced of the tuberculous nature of all their cases of erythema nodosum, as opposed to those who do not look on erythema nodosum as of uniform etiology and as tuberculous in only a small percentage of cases, while others deny any relationship whatever to tuberculosis.

On the basis of the tuberculin test (von Pirquet) applied in forty-eight cases of erythema nodosum in children from 2 to 13 years of age, all of whom gave an intense positive reaction, Pollak² states that the disease occurs in childhood exclusively in individuals infected with tuberculosis, and is in all probability a tuberculous dermatosis. Three of these children later developed an active tuberculosis in the cervical lymph-glands, meninges and pleura, while several had a history of antecedent tuberculosis of glands and bone. Five attempts at experimental inoculation (with blood and an excised nodule from two cases, and a nodule alone from another) gave a negative result.

The conclusions of Pollak are sharply criticized by Moro,³ who had four negative tuberculin reactions in thirty patients. He also failed in three cases to obtain a local reaction in the lesions of erythema nodosum by subcutaneous injections of tuberculin (from 0.2 to 2 mg.), and points out that the occurrence of erythema nodosum is not even necessarily dependent on the presence of a tuberculous allergy of the tissues.

Brian⁴ made a thorough bacteriologic and experimental study of ten cases of erythema nodosum to determine their possible connection with tuberculosis. Seven of eight cases examined gave a positive reaction

to tuberculin (von Pirquet and subcutaneous). By subcutaneous injection of blood from one patient, a woman of 29, without clinical evidences of tuberculosis, Brian succeeded in producing tuberculosis of the inguinal glands in two of three guinea-pigs inoculated. Similar attempts in nine other cases were negative. An acid-fast bacillus was demonstrated by means of sedimentation with acetic acid and antiformin in the blood of the majority of the patients, but Brian does not consider these as tubercle bacilli, and is unwilling to express an opinion as to their significance. Cultures with blood and synovial fluid remained sterile, and inoculation of rabbits with blood and synovial fluid was without effect, and did not produce arthritis or affections of the serous membranes. As a result of his work Brian concludes that tuberculosis is certainly not the only cause of erythema nodosum, and probably enters into the etiology of only a small number of the cases, and this is also true of rheumatic poly-arthritis.

Hildebrandt⁵ relates the case of a woman of 24 years, with a history of tuberculous infection in childhood, who developed the lesions of erythema nodosum ten days after an acute angina and stomatitis. With 1 c.c. of blood drawn when the eruption was at its height, he succeeded in producing tuberculosis in two guinea-pigs by intraperitoneal injection. The tubercle bacilli were found to be of human type. As the eruption disappeared a bilateral pleurisy and pericarditis developed, which from their course and in connection with an infiltration of one apex and tuberculous glands in the neck, were certainly tuberculous. Hildebrandt believes in the tuberculous origin of some cases of erythema nodosum, though the final proof is still lacking.

Kober⁶ is of the opinion that erythema nodosum in children with a family history of tuberculosis is an early symptom of infection with tuberculosis, and considers prophylactic measures as necessary. He cites the history of a girl, aged 6, with erythema nodosum preceded for fourteen days by febrile attacks, prostration and joint swellings, with positive von Pirquet reaction, and later enlarged glands at the hilus, as shown by Roentgen examination.

Jadassohn⁷ has recently expressed the opinion that renewed study of the relationship of erythema multiforme, purpura and above all of erythema nodosum to tuberculosis is necessary. All three conditions must necessarily be regarded either as of complex etiology, or, in addition to the idiopathic disorders of unknown but possibly specific infectious etiology, we must recognize the existence of symptomatic or secondary affections which closely resemble or imitate the idiopathic form. Tuberculotoxins or tubercle bacilli can readily be assumed as causative for some of the secondary or symptomatic forms.

Among the French observers are many who consider the tuberculous etiology of erythema nodosum as proved. Landouzy⁸ maintains that the septicemias due to the bacillus of Koch have a varying symptomatology in accordance with their form, intensity and evolution. The type with a more or less latent symptomatology develops pulmonary, pleural, cutaneous, periosteal, articular, endocardial and pericardial affections, and

* Read before the Section on Dermatology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Uffelmann: *Deutsch. Arch. f. klin. Med.*, 1872, x, 454; *ibid.*, 1876, xviii, 313.

2. Pollak: *Wien. klin. Wchnschr.*, 1912, xxv, 1223.

3. Moro: *München. med. Wchnschr.*, 1913, lx, 1142.

4. Brian: *Deutsch. Arch. f. klin. Med.*, 1911, civ, 272.

5. Hildebrandt: *München. med. Wchnschr.*, 1907, p. 310.

6. Kober: *Med. Klin.*, 1912, p. 781.

7. Jadassohn: *XI Kongress der deutschen dermatologischen Gesellschaft*, September, 1913.

8. Landouzy: *Gaz. d. hôp.*, 1913, lxxxvi, 2098; *Presse méd.*, 1913, p. 941.

among these erythema nodosum is the principal manifestation.

His belief that in the majority of instances erythema nodosum is a septicemia due to the tubercle bacillus is shared by Aubert,⁹ Alamartine¹⁰ and Leriche,¹¹ while Courmont¹² and Pic¹³ state their belief in the tuberculous nature of some though not all of the cases.

Landouzy is the only one who has thus far succeeded in finding the tubercle bacillus in the lesions of erythema nodosum.

The histology of a lesion excised from the forearm of a woman aged 27, with arthralgias, probable endocarditis, typical erythema nodosum and suspected pulmonary tuberculosis was negative as to tuberculous structure, but a typical tubercle bacillus was found imprisoned in a coagulum in the lumen of a vessel. A guinea-pig was inoculated subcutaneously with a nodule from the same patient, and when killed seventy days later numerous tubercle bacilli were found at the site of inoculation, with tuberculous changes in the spleen, liver and lungs.

Aubert reports four cases of erythema nodosum in patients aged 17, 10, 3 and 10 years, all with positive ophthalmo-reaction, and symptoms of profound systemic disturbance. From four to six months later three developed tuberculous processes in the lungs and mediastinum, and two died within one year, while the fourth patient is undergoing an antituberculous regimen.

Courmont's six patients were adults, from 16 to 37 years of age, with positive response to the serodiagnostic test of d'Arloing and Courmont, and other indications of tuberculous infection (pleurisy, hydrarthrosis).

Sezary¹⁴ states that tuberculous meningitis is a common sequel of erythema nodosum. He records the case of a girl, aged 8, who developed tuberculous meningitis four months after a short attack of erythema nodosum, at which time there was rough breathing at the apices and tracheobronchial adenopathy.

Kuhn¹⁵ studied twenty-two cases of erythema nodosum in children and obtained a history of tuberculosis in eight. One of his patients developed tuberculous meningitis six weeks after erythema nodosum and another a tuberculous pleurisy after three months, but Kuhn considers the association of the two diseases as a coincidence.

Dunlop¹⁶ records tuberculous meningitis in a boy of 8, with a family history of tuberculosis, developing fourteen days after an attack of erythema nodosum.

Abt¹⁷ has observed tuberculous meningitis in a child 5½ years old, following immediately on the subsidence of erythema nodosum, and suggests that erythema nodosum, like other infectious diseases, may act by preparing the soil for tuberculous infections, particularly the miliary type.

Meara and Goodridge¹⁸ have recently recorded a case in which directly after the subsidence of a mixed eruption of erythema multiforme and erythema

nodosum in a woman of 25, without a history of tuberculosis, a fulminant tuberculous meningitis developed, and at necropsy there was found tuberculosis of the cervical and mediastinal glands, lungs and meninges.

As a further contribution to this subject I desire to relate briefly the case histories of two patients who came under my observation:

CASE 1.—In a girl, aged 13, with a negative personal and family history, on the fifteenth day after the subsidence of an attack of measles, there appeared a profuse nodose eruption over both tibiae. This was preceded during two days by fever, pain in the right shoulder and swelling in the left cervical region, without sore throat. During the next three days the eruption also appeared about the knees and on the extensor surface of both arms and forearms. The nodes were all highly inflammatory, tense and tender to the touch, and measured from 1 to 2 inches in their longest axis. Within ten days the eruption had entirely disappeared. The cervical adenitis increased during several days, was stationary for two weeks and then gradually subsided. An evening rise of temperature persisted for several weeks, and the patient gradually regained her former strength. Permission for a tuberculin test was not granted, but the clinical features of the adenitis left no doubt of its tuberculous nature.

CASE 2.—Girl, aged 4; sister of the preceding patient, also had measles at the same time as her sister, following which a bilateral cervical adenitis developed, with continuously high temperature for ten weeks. Several small tender nodes appeared on the legs and arms sixteen days after the eruption of measles had vanished, and subsided within a few days. These were followed within one week by a discrete papular eruption which appeared first about the mouth and on the hands. New lesions continued to develop during the next fourteen days and were most plentiful on the hands, forearms, feet and legs. The eruption consisted of scattered papules of pinhead size and slightly larger, without areolae, on the summits of which tiny vesicles rapidly formed and soon dried into adherent, depressed crusts, leaving a barely perceptible scar. The diagnosis of tuberculid was made. A von Pirquet test gave a moderately developed positive reaction. During this period the patient was irritable, complained of sore throat, and of pain in the tumefied cervical glands. The temperature varied between 102.5 and 104. After four weeks symptoms of tuberculous meningitis appeared and death occurred three weeks later.

From a study of the case reports now available in the literature it appears reasonable to regard the close association of erythema nodosum with tuberculosis in these cases as more than accidental. If we look on erythema nodosum as an infectious disease due to a specific micro-organism we can adopt the suggestion of Abt, that, like other infectious disease as measles and pertussis, it may act by preparing the soil for tuberculous infections. It has not yet been definitely established, however, that erythema nodosum has a specific cause, while there is experimental evidence to show that in some cases tubercle bacilli were present in the blood at the time of the eruption, and in the lesions themselves. This would establish the tuberculous etiology of some cases of erythema nodosum, which can then be classed as symptomatic, along with the nodose lesions occurring in syphilis, gonorrhea, scarlet fever and typhoid fever.

Furthermore, erythema nodosum occurring in young children with a family or personal history of tuberculosis should be regarded with suspicion and as perhaps indicative of the change of a latent or unsuspected focus of tuberculosis into an actively advancing process.

128 Wisconsin Street.

9. Aubert: Presse méd., 1913, p. 707.

10. Alamartine: Gaz. d. hôp., 1912, lxxxv, 1027.

11. Leriche: Gaz. d. hôp., 1913, lxxxvi, 2221.

12. Courmont: Lyon méd., 1911, cxvii, 1523.

13. Pic: Lyon méd., 1911, cxvii, 1527.

14. Sezary: Gaz. d. hôp., 1912, lxxxv, 125; Med. Press and Circ., 1912, xciv, 32.

15. Kuhn: Arch. f. Kinderheilk., 1903, xxxvi, 195.

16. Dunlop: Brit. Med. Jour., 1912, ii, 120.

17. Abt, I. A.: Erythema Nodosum, THE JOURNAL A. M. A., Nov. 12, 1904, p. 1454.

18. Meara and Goodridge: Am. Jour. Med. Sc., 1912, cxliii, 393.

ABSTRACT OF DISCUSSION

DR. FRED WISE, New York: While the theory of the tuberculous origin of erythema nodosum is very interesting, it is scarcely in accord with the short duration and practically spontaneous disappearance of the lesions in some of these cases. Lesions which are caused by the presence or activity of the tubercle bacillus in the tissues are almost invariably chronic and persistent in nature. How, then, should we reconcile the presence of tubercle bacilli in the lesions of erythema nodosum, when they are so evanescent in character?

DR. ERNEST L. MCEWEN, Chicago: Dr. E. C. Rosenow of Chicago has recently succeeded in isolating an organism from the lesions of erythema nodosum in a number of cases. In one of these, of which I have personal knowledge, the patient was a young, foreign-born woman with indefinite joint-pains; in the lesions of the legs Dr. Rosenow was able to find this particular organism and to show its close relationship to the streptococcus which he has demonstrated to be the cause of articular rheumatism. If Rosenow is on the right track these cases of erythema nodosum associated with tuberculosis must be explained as Dr. Foerster has suggested, namely, that some acute infectious disease, like measles, lights up a latent tuberculosis, while coincidentally an infection with Rosenow's organism occurs. It is quite remarkable that so many cases of erythema nodosum associated with tuberculosis are reported in the literature. We have reason to expect that the future will reveal to us some wonderful things in connection with the transmutation of organisms. We know that certain strains of organisms will select certain tissues and leave others alone, a fact which is as important as it is striking. Rosenow, I understand, has been able to change his streptococcus of rheumatism, through a series of definite stages, into a pneumococcus, and back again, by animal inoculations under certain conditions. This field of research, I believe, will prove to be an extremely rich one in the near future.

DR. GEORGE M. MACKEE, New York: I believe, with Dr. McEwen, that Rosenow is on the right track. I also feel as does Dr. Wise with regard to the short duration and spontaneous recovery of erythema nodosum lesions, and I cannot conceive of a tuberculous process of so brief a duration. In erythema nodosum we have lesions that last only a few days, and it is almost inconceivable that they should be due to the toxins of tuberculosis.

DR. W. C. BROWNSON, Asheville, N. C.: With regard to the value of the von Pirquet test from a diagnostic point of view, the pediatricists have come to the conclusion that it is of doubtful value except in very young children. Still we constantly read of the von Pirquet test as an aid in the diagnosis of tuberculosis verrucosa cutis or blastomycosis. As a matter of fact, the test is of little value except in young children.

DR. J. B. KESSLER, Iowa City, Iowa: This discussion reminds me of a patient I had last winter who was suffering from erythema nodosum. The case had been regarded as one of lues until that diagnosis had been disproved by several negative Wassermann tests. The paper of Dr. Foerster and the work of Dr. Rosenow certainly show us the way to make a correct diagnosis in these cases.

DR. A. RAVOGLI, Cincinnati: I am not inclined to believe that erythema nodosum has any relationship to tuberculosis. I have seen only a few cases of this affection, usually occurring in young girls, ranging in age from 12 to 19, and giving a history of some acute antecedent disease, usually a sore throat together with arthritic pains. The attacks were of brief duration, the eruption being usually confined to the lower extremities; in the form of hard, oval, red erythematous nodules, which disappeared in a short time, leaving the patient in an apparently normal condition. For these eruptions I think Rosenow has given us a very good explanation, namely, that the staphylococcus or some hybrid form of streptococcus from the tonsils enters the circulation and when it reaches the small ramification of the capillary blood-vessels, produces a kind of thrombi which causes exudation and the erythematous eruption. Bazin's disease, erythema

induratum, I have always regarded as a localized tuberculosis, as it often ends in ulcerations.

DR. RICHARD L. SUTTON, Kansas City, Mo.: I have recently done some work in connection with sarcoids (Boeck and Spiegler-Fendt), erythema nodosum and the erythema induratum of Bazin. Beginning with nodular tuberculosis of the hypoderm (Wende), we can readily separate the various types of lesions into definite clinical groups. There are undoubtedly three distinct varieties of "erythema nodosum," and perhaps four: erythema nodosum directly due to bacteria (Rosenow), erythema nodosum due to the tubercle bacillus or its products, and erythema nodosum occurring as a result of the ingestion of certain foods or drugs. The tuberculous type of erythema nodosum I think should be designated as "erythema indurata disseminata," to distinguish it from the other varieties.

DR. O. H. FOERSTER, Milwaukee: I wish to emphasize that many of the cases reported in the literature have been in children in whom the erythema nodosum has been followed by a tuberculous meningitis or other tuberculous manifestation.

DISEASES AND NEW GROWTHS OF LYMPHATIC ORIGIN *

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When I was first asked to read a paper before the Section on Dermatology of the American Medical Association I hesitated to accept because I did not know anything new to communicate. Then my friend, Udo Wile, proposed that I speak about the changes of the skin in lymphatic leukemia, a subject I have written about. Though many of you will be quite familiar with what I am going to say, there may be some who have not had much opportunity to study this question.

Skin troubles may be the first prominent symptom of lymphadenosis and the skin specialist familiar with these troubles will, in a good many cases, be able to make the diagnosis in a very early stage of the disease. Concerning the nomenclature I think the old names lymphatic and myeloid leukemia should be replaced by aleukemic, subleukemic and leukemic lymphadenosis and myelosis. The essential pathologic feature of lymphadenosis is the generalized hyperplasia of the lymphatic hematopoietic tissue and the essential feature of the myelosis is a generalized hyperplasia of the myeloid tissue. According to the blood-changes, which represent only a symptom, although a very important one—we distinguish, in speaking of lymphadenosis, an aleukemic form, if the blood is normal, a subleukemic form if the number of the white blood-cells is normal or very little increased, but the proportion of the lymphocytes is augmented, and a leukemic form when there is an absolute, permanent, progressive increase of lymphocytes and the total number of leukocytes is augmented.

The changes of the skin that may be observed in the beginning or in the later course of lymphadenosis can, from clinical and histologic points of view, be divided into changes not characteristic at all and not distinguishable from clinically and histologically similar affections of other origin on the one hand, and on the other, changes representing proper localizations of the lymphadenotic process in the skin. The former more frequently met, are called leukemids, a name

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suggested by Audry; the latter are the lymphadenoses of the skin in the proper sense of the word.

LYMPHADENIDS (LEUKEMIDS)

Among the skin lesions not characteristic in themselves are to be mentioned the purpura met especially in the so-called acute mostly large-celled leukemia, first described by Friedreich, Ebstein and A. Fraenkel. In those cases, multiple swelling of the lymph-nodes, enlargement of the liver and spleen may be completely absent, and the most striking features of the clinical picture are either petechial or more diffuse hemorrhages of skin and mucous membranes, the latter often terminating in necrotic lesions of the gums and the mucous membrane of the mouth and suggesting scurvy.

If there is fever or severe troubles of the general health one first thinks of a septic affection leading to the hemorrhagic diathesis and only the blood-picture enables one to make the diagnosis, which might be quite impossible in the aleukemic forms of this type. The purpura can be combined with the formation of blisters, described by Shattuck in this country.

Then there must be mentioned the so-called prurigo lymphatica (first described by E. Wagner, Buschke, Breseendorff). Like the prurigo of Hebra the prurigo lymphatica is characterized by numerous pinhead- to hemp-seed-sized semiglobular or more conical, pale, elastic, edematous papules each bearing on its top a deep-seated vesicle that soon gets scratched off and is replaced by a crust. The skin between these papules becomes thickened, edematous, as the effect of the continual scratching. The surface is dry and scaly. Secondary pus infection (impetigo, furuncles) complicate the picture. In a word, there is, morphologically, a very great resemblance between prurigo lymphatica and the prurigo of Hebra. Whereas, Hebra's disease, however, always starts in early childhood, recurs in more severe attacks during the winter or summer, the prurigo lymphatica starts at every age and shows exacerbations in certain seasons. In prurigo lymphatica one does not find the typical localization of the prurigo of Hebra.

Prurigo lymphatica is not only observed in aleukemic and leukemic lymphadenosis, but also in other more or less generalized affections of the lymphatic apparatus, parenchymatous as well as granulomatous, in lymphosarcoma (Wunderlich, Dubreuilh), in some cases of tuberculosis of the lymphatic glands, in hyperplastic conditions of the lymphatic glands observed in malaria, in lymphogranulomatosis (Hodgkin's disease). Neither the clinical nor the histologic picture (thickening of the epithelium, formation of rare vesicles, status spongoides, chronic inflammatory changes of the superficial layers of the derma) is sufficient to prove the lymphadenotic nature of the condition. The diagnosis has to be based on the blood-finding or the histologic examination of an excised lymph-node.

In other cases you might observe an intense itching, a pruritus, without any visible lesions of the skin or secondary changes, due to scratching or pus infection. This pruritus is not of itself characteristic in any way. Very instructive and convincing of the connection between affections of the lymphatic system and pruritus is the case published by Blaschko. A patient with lymphosarcoma of the supraclavicular glands suffered from very severe itching. After removal of the glands the pruritus disappeared but came back four years later with a recurrence of the lymphatic new-growth.

In other cases of lymphadenosis, one can observe common urticaria, urticaria papulosa or papulovesiculosa (lichen urticatus), multiple formation of furuncles and carbuncles.

More interesting are the cases of universal exfoliative erythrodermia observed in the course of lymphadenosis by Elsenberg, Peter, Wassermann, Nicolau. Those cases show a close resemblance to the so-called pityriasis rubra of Hebra and many observations of cases published under this name may be allied to a lymphadenotic condition. The "leukemic and pseudo-leukemic erythrodermias" are characterized by a sub-acute or chronic progressive reddening of the skin spreading in a shorter or longer lapse of time over the whole, or almost the whole body, by formation of bran-like or flaky scales and enlargement of the lymph-nodes. The latter symptom, however, can be absent as in Wassermann's case, in which Ehrlich had made the diagnosis of lymphatic leukemia on account of the blood-finding and the post-mortem detected a considerable enlargement of the retroperitoneal glands caused by a pure lymphoid hyperplasia.

There may be swelling of the liver and the spleen, but these symptoms are very often absent and the diagnosis can be proved only if an increase of lymphocytes in the blood is shown, the total number of leukocytes being normal or augmented. In case the blood-picture is aleukemic, a histologic examination of an enlarged lymph-node is to be made. To some extent the skin-lesions vary. There may be more or less complete loss of hair and nails; the latter may be cracked and thickened; in one case the skin is thickened, edematous, while in another it is thinned, atrophic, leading to retraction (ectropion of the eyelids, for instance). Fever is frequent but may be absent. Among the subjective symptoms must be mentioned the feeling of chill common to all universal erythrodermias and due to the augmented loss of heat and the itching, mostly not very marked, but sometimes rather intense.

The histologic changes consist in a continuous diffuse or more circumscribed infiltration of the upper layers of the derma, the stratum papillare and sub-papillare, the blood-vessels of which are much dilated. The infiltration is formed by small deeply stained round cells—morphologically and after their tinctorial properties identical with the small lymphocytes of the lymph-nodes and larger elements with pale oval nuclei—proliferated connective-tissue cells. The lymphocytes surround the vessel follicles, sweat-glands and sebaceous glands; the fibroblasts are more diffusely spread between. Except the cell-forms mentioned you find mast-cells and pigment cells, the latter sometimes in very large numbers. In Nicolau's case they formed at the lower border of the infiltration a band consisting of three or four rows of cells. The rete malpighii is mostly atrophic and covered by a more or less hypertrophic horny layer.

A differentiation of these "pseudoleukemic and leukemic erythrodermias" from other universal chronic exfoliative reddenings of the skin of unknown origin, especially from the genuine pityriasis rubra of Hebra, is quite impossible by means of clinical and histologic study of the skin only. It has already been mentioned, and especially Jadassohn and Nicolau insist on the point, that some of the cases of Hebra's disease belong to the lymphadenosis (lymphatic leukemia and pseudo-leukemia of the old nomenclature). A critical analysis in that respect is quite impossible; so far as I know in no case published as pityriasis rubra of Hebra

has a reliable blood-count been made. In every case of chronic universal exfoliative erythrodermia the blood must be examined at different times, repeatedly, with special regard to the differential count, and the diagnosis of pityriasis rubra of Hebra can be made only after excluding a leukemic and a tuberculous erythrodermia (cases of the latter described by Jadassohn, Brunsgaard, Wertheim-Finger, as you know). As the histologic findings of the universal exfoliative erythrodermias encountered in lymphadenosis are not especially characteristic, common chronic inflammation (perivascular round-cell collections and proliferation of the connective-tissue cells), they must be differentiated, at least for the present, from the clinically, not so much, as the histologically absolutely characteristic, universal, lymphadenotic (lymphatic-leukemic) infiltrations of the skin.

Suppose the cause, the pathologic agent or agents of lymphadenosis will be discovered one day, suppose the bacteriologic facts found by E. Fraenkel and Much, and by myself—not very convincing now—will be confirmed by other authors and put on a solid experimental basis—suppose all that, and the more or less artificial borders put up between the true clinically and histologically well-characterized lymphadenosis of the skin and the non-characteristic so-called lymphadenids (leucémids—Audry) will disappear.

THE PROPER LYMPHADENOSIS OF THE SKIN

The proper (leukemic, subleukemic and aleukemic) lymphadenosis of the skin represents a pathologic condition completely equivalent to the changes of the inner organs caused by a generalized hyperplasia of the lymphatic tissue. The lymphadenosis of the skin may be divided (after Riehl, Paltauf, and F. Pinkus) into a diffuse or better, universal form, and a circumscribed form causing flat infiltration, nodes or tumor-like swellings.

In the so-called myelosis (myeloid leukemia)—characterized by a generalized hyperplastic proliferation of myeloid tissue—a diffuse universal participation of the skin with typical histologic structure (myeloid tissue) has not been observed. There is a circumscribed myelosis of the skin, however, first perhaps described by Hindenburg and lately by Brunsgaard from Christiania, in a very remarkable paper. Histologically myelosis cutis shows perivascular myeloid cell-formations, that mean neutrophil and eosinophil myelocytes, myeloblasts, giant-cells (megacaryocytes) and nucleated red corpuscles. In comparison with the circumscribed lymphadenosis the circumscribed myelosis of the skin is extremely rare and there have been observed only a few cases.

UNIVERSAL LYMPHADENOSIS OF THE SKIN

The conception of the universal form is not very well defined and has not been accepted by all authors, a fact probably due to the extreme rarity of the cases. Some authors—for instance, Felix Pinkus, who has written an excellent article on lymphatic leukemia of the skin—mix the universal form up with the so-called lymphodermia perniciosa.

The name "lymphodermia perniciosa" has made great confusion and has been applied to quite different processes showing certain clinical similarities. Kaposi first used this name for a case studied by himself and well known from the literature. No exactly analogous case has ever been observed since, by Kaposi or any other author. Tallant thinks that the pathologic

changes in the original case ought to be considered as an atypical malignant proliferation of the lymphatic tissue-leukosarcomatosis, in the sense of Sternberg. Most of the cases reported afterward as lymphodermia perniciosa correspond to the type called by the French authors (E. Besnier, Vidal, Hallopeau, Jeanselme, Leredde) *érythrodermie prémycosique*; some of them are perhaps identical with the universal form of lymphadenosis.

A satisfactory critical analysis of all the material referring to that subject is scarcely possible, as most of the publications are of an older date and do not give a sufficient description of the hematologic and histologic picture. By clinical observation alone a differentiation of all these processes cannot be made. Clinically their similarity may be striking. Universal reddening and more or less considerable tumefaction of the skin in connection with swelling of all the palpable lymph-nodes, and with enlargement of liver and spleen may be found in generalized purely hyperplastic and perhaps also in aggressive malignant proliferation of the lymphatic apparatus as well as in certain—principally in the lymphatic tissue—localized infectious granulomas (mycosis fungoides and perhaps lymphogranulomatosis). As we do not know very much about the cause of these different conditions they must be differentiated by their pathologic picture. Their diagnosis has to be based on the histologic findings. The blood-picture may be of great value for the diagnosis if it shows characteristic alteration, but if it is normal or only slightly changed it is of no use in the classification of those affections. Therefore, I suggested to divide the universal infiltrating erythrodermas observed in the course of the different affections of the lymphadenoid tissue, on account of the histologic changes, into four groups: (1) lymphadenotic (lymphatic-leukemic), (2) lymphosarcomatous, (3) mycotic, and (4) lymphogranulomatous erythrodermias.

The number of the cases of universal infiltrating erythrodermia, in which there can be no doubt, clinically, hematologically or histologically—about their lymphadenotic nature, and which should be called lymphadenotic erythroderma (diffuse lymphadenosis of the skin) is very small and amounts only to four, including one personal observation. The first case has been described by Riehl of Vienna, to whom we are indebted for the knowledge of this disease and the second one has been observed and published by Linser of Tübingen, the third one, by Rodler-Zykin in Jadassohn's clinic, differs rather from the classic type.

I shall not bother you with the history of my own case. You will find it in my publication on this subject. There was a universal intensely itching swelling and reddening of the skin, enlargement of all the palpable lymph-nodes especially the axillary, inguinal and crural. The blood-picture was that of lymphatic leukemia, total number of leukocytes 40,000, lymphocytes 60 per cent. (among them 11 per cent. of large atypical forms). The histologic examination of an excised piece of skin showed the characteristic lesions—a continuous, diffuse, pure lymphocytic infiltration of the two upper thirds of the derma, going down to the lower third of the cutis propria and the subcutaneous tissue in form of perivascular and periglandular cell-collections.

The infiltration seems to be very monomorphous—at least at the first glance—and contains numerous newly formed much-dilated vessels. If the infiltrating cells

are examined with a higher-power lens it may be remarked that they are all lymphocytes, but that the common so-called small lymphocytes are rather scarce and that the large forms with pale round or oval, sometimes kidney-shaped and lobulated nuclei, the so-called lymphoblasts and atypical forms, prevail.

Mitoses are very numerous. There is no proliferation of the connective tissue. The original connective tissue is mechanically dislocated and forms a sort of network, the meshes of which are filled in by the lymphocytes. The epidermis is in some parts proliferated, in others atrophic. The papillary and subpapillary layers show a very marked edema, dilatation of blood-vessels, but very little infiltration, so that regarding the sections with a low power, the uppermost layer of the derma seems to be normal. About the bacteriologic findings I shall speak later.

In the later course the number of leukocytes increased considerably (up to 120,000, 78 per cent. of which were lymphocytes). The patient died one year and nine months after the first trouble of the skin had appeared. The post-mortem showed diffuse lymphatic leukemic changes of the skin, adhesive pericarditis, fatty degeneration of the heart-muscle, aneurysm of the aorta descendens, hydrothorax (left side) and edema of the lungs, leukemic infiltration of the liver, spleen, kidneys and lymphatic glands.

CIRCUMSCRIBED LYMPHADENOSIS OF THE SKIN

While the clinical picture of the diffuse lymphadenosis of the skin is not very well characterized, the diagnosis of the circumscribed form is not so difficult and can be made with more or less probability. The two forms never go into each other. The circumscribed type neither terminates in a universal swelling of the cutis nor are there well-defined tumor-like growths to be observed in the course of the lymphadenosis universalis. The circumscribed patches and tumors are observed in the aleukemic, subleukemic and leukemic lymphadenosis.

My personal observations of circumscribed lymphadenosis of the skin concern three cases of subleukemic and two cases of aleukemic lymphadenosis (in the latter the blood examined at different times being absolutely normal).

These facts are of certain value and prove the identity of processes that show pathologically the same changes but differ as to the blood-picture and were formerly strictly separated as lymphatic, leukemic and pseudoleukemic. Ehrlich and his pupil, F. Pinkus, the well-known dermatologist in Berlin, showed first that the lymphatic, leukemic and pseudoleukemic are the same process. Long before them, J. Orth had, on account of the pathologic findings, pointed out their relationship.

DIAGNOSIS OF THE CIRCUMSCRIBED LEUKEMIC AND ALEUKEMIC LYMPHADENOSIS OF THE SKIN

An absolutely certain clinical diagnosis of these lesions is impossible considering the rarity of the affection on one side and certain similarities with other processes on the other side. Nevertheless, you can, in the great majority of cases, conclude on the nature of the skin lesions, and I shall try to sketch the most important clinical features. First of all, the localization is very characteristic, the face being the seat of all predilection that is taken either exclusively or generally. It is quite an exception that it does not show any changes like in the much discussed case observed

by Nékam. There are other skin diseases, of course, that prefer the face (lupus vulgaris, lupus erythematosus), but the appearance of chronic tumor-like swellings of the face reminding one of sarcoma, must always raise the suspicion of lymphadenosis.

Especially the nose and the adjoining parts of the cheeks, the eye-lids, lips, chin, ears and ear-lobes are involved. The infiltration of the eye-brows and glabella gives the face a most characteristic appearance recalling the facies leontina of the lepers. Frequently the scalp and upper extremities, especially the backs of the hands, are affected at the same time as the face.

Among the less frequent localizations are to be mentioned the skin of the breast, especially about the mammae (Pfeiffer, second of my cases), abdomen, scrotum (one of my observations), glans penis (infiltration of the corpora cavernosa in one of my cases). Occasionally every part of the body may be involved, but the cases with numerous nodules all over the body (head, trunk and extremities), cases described by Biesiadecki, Hochsinger and Schiff, Kreibich (second case Feger), are extremely rare.

Concerning the shape of the lesions it must be mentioned that more or less well-defined, macular, slightly elevated patches and semiglobular projecting tumors develop close together and turn one into the other. I think that this fact is very characteristic and of value, making the diagnosis with the genuine new growths (sarcoma).

The formation of ringed, festooned lesions either by central involution and peripheral spreading of a single patch or by juxtaposition of different smaller patches is quite unusual in lymphadenosis, whereas it is frequently seen in mycosis fungoides. The flat patches may persist for years without transformation into tumor-like new growths. The size varies within the widest limits. The patches vary from the size of a silver dollar to an area corresponding to two palm's breadths and more. The tumors are from pea-size up to the size of two fists and are sometimes lobulated, showing that they have formed by coalescence of different smaller new growths.

The color is mostly a peculiar yellowish-brown or yellowish-brown red, rarely bluish-red, on pressure translucent, reminding one of lupus vulgaris. If there is a hemorrhagic diathesis at the same time, the tumors may be the seat of hemorrhages and look like melanotic new growths (dark blue, bluish-black). If the infiltrations are localized only in the deeper layers of the cutis propria and in the subcutaneous tissue, the surface may appear quite normal or only show a slight bluish tinge.

Sometimes the tumors are firm to the touch, sometimes soft and always of a somewhat elastic edematous consistence. The changes remain always localized to the derma and hypoderma or to the subcutis alone; they never take the underlying tissues. The visible mucous membranes are, as a rule, free from lesions except some slight edema. There are only three cases of lymphadenosis (observed by Fröhlich, Pfeiffer, Kirkoroff) with typical changes of the mucous membranes of mouth, pharynx and larynx.

Most of the cases of so-called leukemia and pseudo-leukemia cutis, with formation of nodes about the pharynx, the uvula, the soft palate, etc., or with diffuse infiltrations of the mucous membranes of the pharynx and larynx are lymphosarcoma (Case Fano and Liebmman, case Schultz). A very striking feature is the absolute want of any signs of a regressive metamor-

phosis (softening disintegration). Even if rather large tumors disappear suddenly, for instance, after an erysipelas, or a pneumonia, there is only a slight atrophy of the skin left. True scarring is never observed. It is quite exceptional that the new growths ulcerate. Only in one case (Nicolau) has there been a superficial ulceration. The course is very characteristic. After growing rather rapidly to a certain size they may remain stationary for years or grow but very slowly. The subjective symptoms are, in the majority of cases, very trifling and consist in some burning sensations recurring from time to time, and in a certain pain on pressure.

Of great importance in diagnosis are, of course, multiple symmetrical swellings of the lymph-nodes especially of the retromaxillary and submaxillary regions, about the neck, the axillae and the groins. These enlarged glands may be found in other diseases of the lymphatic system, however, leading equally to tumor-like conditions of the skin, and on the other hand, in lymphadenosis the palpable lymph-nodes may be of normal size. In three of my cases nobody would have thought of lymphatic leukemia by examining the lymphatic glands. The same is true of enlargement of the liver and the spleen.

The blood-picture is a great help if it shows the characteristic changes of leukemic and subleukemic lymphadenosis, but if it is aleukemic, that means normal, it cannot influence the diagnosis. The blood-finding alone is not always reliable, since leukemic blood-findings may be seen in atypical new growths of the lymphatic system (lymphosarcoma, leukosarcomatosis) and in certain forms of mycosis fungoides. Therefore, a histologic examination should be made in every case.

The histologic picture is absolutely typical and shows a pure, lymphocytic infiltration of the skin and the subcutaneous tissue, stopping with a very sharp line just beneath the papillary layer. The epithelioma (normal or flattened) is always separated from the tumor-like infiltration by a narrow, somewhat edematous zone, in which one can only with a high-power lens detect some newly formed cells. This distribution is very characteristic. The original collagenous tissue is dislocated and forms a kind of reticulum; the elastic tissue has been destroyed in the center of the large tumors. In the smaller patches, it may be rather well conserved.

In the large tumors absence of follicles, sebaceous glands and sweat-glands may be observed. In the smaller patches one can see that the process very often starts in the neighborhood of the hair follicles, the sebaceous glands and sweat-coils, which are well conserved. This perifollicular, periglandular localization is due to the fact that follicles, etc., are surrounded by a very well-developed system of capillaries.

At the first glance and employing the ordinary stains, it looks as though there was only one cell-form, small, more or less round elements with a very narrow border of protoplasm or without protoplasm, and a dark-stained nucleus showing sometimes a sort of wheel structure employing certain stains (polychrome, methylene blue, methyl green, pyronin and a combination of Much, Grünwald, Gram), one is able to differentiate between the different forms of cells.

Most of the infiltrating cells are of the type of the so-called small lymphocytes of the lymph-nodes but there are also irregularly scattered lymphoblasts and

lymphoblastic plasma-cells (cells with a large, pale, round or kidney-shaped, lobulated nucleus, two or more very distinct nucleoli and a narrow border of protoplasm, that takes the pyronin more or less intensely). At the periphery there are some proliferated connective-tissue cells.

Lymphocytic plasma-cells (type Marschalko) are absent in the majority of cases but sometimes they are found, as in one of my cases, in which they were rather numerous in some sections. Mitoses are very rare.

PATHOGENESIS

There are two different theories about the origin of the lymphadenotic infiltrations of the skin. Some authors (Kreibich, Nékam, Nicolau) thought that innumerable lymphocytes emigrated and were deposited in the neighborhood of the blood-vessels; that there was no local proliferation of lymphocytes at all or only to a very small amount. In favor of this theory, the above-mentioned authors noted the absence of inflammatory changes and proliferative lesions of the connective tissue, the lack of mitoses, in spite of the extraordinary quantity of newly formed cells, the presence of small lymphocytes in the lumen, the walls and the neighborhood of the same vessel and the universal distribution in some cases.

This theory was opposed by Felix Pinkus. Basing his theory on Ehrlich's doctrine that the lymphocytes had no self-movement, he said it was quite impossible or at least very improbable that the numerous cells forming the lymphadenotic infiltrations came exclusively from the blood. Concerning the lack of mitoses, he found something analogous in the lymphatic glands of his own case—very few mitoses and absolute absence of germinating centers.

He thinks that in the early stages of lymphatic leukemia there is an overproduction of lymphocytes but later on a sort of stasis takes place. Based on Ribbert's theory that the lymphatic tissue is spread all over the body, he explains the origin of the lymphadenosis cutis by a local proliferation of the preformed lymphatic tissue of the skin, produced by the leukemic condition, analogous to the lymphatic proliferations in the lymph-nodes, the spleen, marrow, lungs and kidneys. Suppose that, normally, there is lymphatic tissue in the skin, the theory of Pinkus seems to be the most plausible. There can be no doubt that in some cases the cell-proliferation by indirect division exists. Nékam and Nicolau insisted on the lack of mitoses. I found karyokineses in two of my cases of circumscribed lymphadenosis cutis and in my case of universal lymphadenosis they were quite numerous.

On the other hand, it is possible that some of the lymphocytes come from the blood. We know from the researches of Max Schultze, Hirschfeld, Wolf, Maximow, Jolly, Helly, Schwarz, Schridde and Zieler, that the lymphocytes are capable of moving or at least acquiring this power of self-movement under certain pathologic conditions.

Schridde lately contested the existence of rudimentary lymph-follicles in the fetal connective tissue, considering the perivascular cell-collections found by Ribbert to be myeloid formations (consisting of myelocytes, myeloblasts, nucleated red cells, megakaryocytes) which are wide-spread in the embryonic organism. For the explanation of the perivascular formation of the lymphadenotic infiltrations of the skin the preexistence of preformed lymphatic tissue is not nec-

essary. It is quite possible that the lymphatic new growths originate from the perivascular lymphocytes of the adventitia, the so-called *Adventitiazellen* (Marchand) or from the endothelial cells of the lymphcourses changed by metaplasia (Schridde) or from the so-called *Gefassrandzellen* (Pappenheim).

ETIOLOGY

We know nothing absolutely certain concerning the cause of the generalized hyperplasias of the lymphatic system. The so-called acute leukemia is perhaps of infectious origin, although it is sometimes quite impossible to exclude a secondary infection in these cases, and many authors think that the acute forms are quite another disease and have nothing to do with the chronic lymphadenosis. Concerning the cause of the latter, some pathologists (Orth, Pappenheim) suggested that it was of an infectious nature; others think lymphatic leukemia must be placed among the genuine neoplasms; others consider it as a special trouble quite different from the true new growths and from the infectious granulomatous conditions.

E. Fraenkel and Hatluch inoculated the emulsion of a lymphatic leukemic lymph-node into six guinea-pigs and found, on smears of two swollen lymph-glands, large, partially granular rods, three or four times as thick as tubercle bacilli and partially or completely stained by Gram stain. E. Fraenkel and H. Much found the same Gram-positive, thick, partially granular rods in the antiformin sediment of spleen and lymphatic glands in other cases of lymphatic leukemia. There were no acid-fast rods to be found. The leukemic bacilli of E. Fraenkel and H. Much could not be confirmed by other authors and it is, of course, absolutely necessary to control their findings on a larger material and by animal inoculations.

Then there should be mentioned the very interesting case published by Coley and Ewing in the *Transactions of the New York Pathological Society* under the title of "Acute Lymphatic Tuberculosis (Pure Generalized Lymphatic Hyperplasia Caused by Tubercle Bacilli)." In one of my cases of circumscribed leukemia of the skin, I found, in the sections of skin and spleen, partially extracellular, acid-fast, Gram-positive bacilli. Some of them looked like tubercle bacilli, some of them were thicker. In the case of universal lymphadenosis of the skin I found the same organisms, acid-fast Gram-positive and antiformin-fast bacilli. As I had not at all expected to find acid-fast bacilli in lymphatic leukemia, I had, unfortunately, not inoculated guinea-pigs or monkeys and I cannot say anything about the nature of these micro-organisms. They show, however, that we will have, in every case of lymphadenosis, to look for them and to put these findings on an experimental basis.

The prognosis of the lymphadenosis of the skin coincides with the prognosis of lymphatic leukemia in general.

ABSTRACT OF DISCUSSION

DR. H. H. HAZEN, Washington, D. C.: We American dermatologists have known for a long time of the splendid work of Professor Arndt. We have read some of his articles on skin diseases due to lymphatic derangements and are amazed at the depth and breadth of his pathologic knowledge. This proves that in order to be a good dermatologist, one must first of all be a good general pathologist. We have in this group of diseases the sarcomas, including that of Kaposi, and the curious tumors described by Polland and others. Next come the Spiegler-Fendt sarcomas, and then the various other

sarcomas, between which there is often no hard-and-fast dividing line. On the other hand, and likewise grading into the sarcomas, we find the lymphatic diseases, which may roughly be divided into leukemic and aleukemic. In the first group belong acute and chronic lymphatic leukemia, which merge one into the other, and the myeloid leukemia and also chloroma. In the aleukemic group we may place multiple myeloma, Mikulicz' disease, Hodgkin's disease, mycosis fungoides and certain lymphomas such as those described by Winfield. Nearly all of the aleukemic growths may become leukemic. Wende has described a typical case of Hodgkin's disease or pseudoleukemia that terminated in leukemia, and the case of mycosis fungoides reported by Pardee and Zeit, although the blood-counts might not bear critical examination, ended in leukemia so far as the blood-picture and the necropsy findings could be interpreted. We must bear in mind that when there is any visceral complication in mycosis fungoides, it is limited to the lymphatic glands or the bone-marrow. In addition, certain cases of lymphodermia perniciosa (of Kaposi) seem to be a direct connecting link between leukemia and mycosis fungoides, while the leukemias are connected with the sarcomas through the so-called leuko-sarcoma of Strenberg, a condition of which most Americans have heard very little. Certain other diseases also show a relationship to the sarcomas. Some years ago White and Proescher described a spirochete as the cause of some of these diseases, but their work has not been confirmed. More recently, however, Bunting and Yates seem to have isolated a bacillus as the exciting organism in Hodgkin's disease. In diagnosis, Dr. Arndt has rightly emphasized the fact that leukemic conditions may have aleukemic periods, and at such times a blood examination would be positively misleading. He calls attention to the necessity, in such cases, of studying tissue obtained by biopsy, but it seems to me that there might be some danger of confusing a leukemic condition with a benign lymphoma, as in the case of Winfield. In the treatment of these conditions, the Roentgen ray should be used, possibly combined with benzol. Will Dr. Arndt give the German conception of lymphogranulomatosis, concerning which some of us are a trifle hazy?

DR. JOHN A. FORDYCE, New York: Dr. Arndt's lucid description of these lymphatic affections of the skin will lead us to study our cases more carefully from both a clinical and a histologic point of view. In the last few years I have had two cases of universal lymphadenosis similar to the condition described by Dr. Arndt. One case was that of a woman with a generalized erythrodermia without much exfoliation, together with enlargement of the lymphatic glands. That case undoubtedly belonged to the group described by Dr. Arndt under the name of universal lymphadenosis. After trying all the usual remedies in this case, we resorted to the Roentgen rays, to which the lesions yielded rather rapidly, and at present the patient shows only a few recurrent lesions, with some thickened patches of skin. It has been found impossible completely to eradicate the condition. The picture never looked anything like mycosis fungoides. Several blood examinations were made without any definite findings, but after listening to Dr. Arndt's paper we will proceed to make a more careful examination. Some years ago I had another case of generalized thickening of the skin, with lymphatic enlargement, which at the time was regarded as one of premycotic erythrodermia.

DR. A. RAVOGLI, Cincinnati: While studying under Hebra years ago, I saw many cases of prurigo, and he usually referred to them as scrofulodermata and prescribed cod-liver oil with excellent results. The lymphatic exudation in the derma constituting the small papula of prurigo offers a good explanation for its persistency, and for the itching sensation, which it causes. In granuloma fungoides, although the leukemic condition has been advocated by Brocq and others, yet there may be a peculiar infection, which we so far do not know, which causes the proliferation and the fungous growths of the lesions. It is possible that the lymphatic system acts as an important factor in some cases of erythroderma, of which we have, so far, no idea of their etiology.

DR. MARTIN F. ENGMAN, St. Louis: The more we study and follow the literature on the differences between the so-called granuloma and malignant growths, the more we must realize that too much dependence cannot be placed on the morphologic aspect of the subject. The experimental work done by Rous and others on the dog and chicken tumors shows that in one there was produced, apparently, a granuloma and in the other a sarcoma. The original irritation, be it a micro-organism or of chemical nature, may cause certain lymph-changes and produce certain objective clinical symptoms, and as these increase, we may have later the typical blood-changes, which in the earlier types may be absent, while in other cases they follow very quickly. In the literature on mycosis fungoides, we are given the blood-findings, yet a differential count is unique. In skin affections, leukocytosis alone means nothing. We reported six cases of mycosis fungoides, with indefinite blood-findings; later, we obtained a leukocytosis, but the cells were composed of polymorphonuclear leukocytes, without any increase in the lymphocytes. In the tuberculid group we have one case now under observation, and we have found that all these cases run a high mononuclear count. The whole classification depends largely on the blood-findings.

DR. S. POLLITZER, New York: The entire subject of the leukemic diseases of the skin is relatively new and has been studied only since the establishment of hematology on a scientific basis by Ehrlich. These cases are, of course, very rare, although they are not so rare as their scant report in the literature would lead us to believe. I have been looking for leukemic affections of the skin for several years, and I am sure that in the past I overlooked some cases. I have at present under observation a man with typical lesions of leukemia, and with both a relative and absolute lymphocytosis. A relatively uncommon feature in this case is the occurrence of bullae of the deep-seated type, that when ruptured, healed slowly. Their cell-content is largely lymphocytic. I also have in mind a woman with nodular fawn-colored lesions on the extremities, pea-sized and smaller, many of them excoriated, who came to me because of a pruritus which was confined mainly to the extremities. I suspected a leukemic affection, but a blood-count showed a normal blood-picture. I then made a biopsy and was surprised to find that I was dealing with a rather unusual form of leprosy. I think it is quite impossible to separate the generalized erythrodermia of mycosis fungoides and pityriasis rubra from erythrodermia leukemica on clinical grounds. Jadassohn, who was the first to range pityriasis rubra with the tuberculids, did not by any means maintain that all cases of pityriasis rubra belonged to that class. It is evident that erythrodermia is a symptom of many different systemic disorders of a toxemic character. Cases of mycosis fungoides, which do not properly belong to the group described by Dr. Arndt, are far more frequent than those of the leukemic affections. In the extension statistics collected by the American Dermatological Association covering three-quarters of a million cases of skin diseases, we have thus far made no place for the leukemic affections of the skin, whereas mycosis fungoides has been reported in the proportion of one case to every three thousand.

PROF. G. ARNDT, Berlin: I purposely omitted any discussion of various affections of the lymphatic tissue, such as lymphosarcoma, lymphogranuloma and leukosarcoma. Lymphogranulomatosis, concerning which Dr. Hazen asks, is essentially the same as Hodgkin's disease, or malignant granuloma, with swelling of the lymph-nodes, the liver, spleen, and so on. The blood-picture in these cases is either normal, or there may be hyperleukocytosis, sometimes with eosinophilia; no lymphocytosis. The histologic picture in these cases is quite characteristic, and differs from that in ordinary hyperplasia of the skin: here we have small and large lymphocytes, with giant-cells of a peculiar type, sometimes reminding one of the giant-cells of sarcoma, with one large, bizarre nucleus. We know nothing about the etiology of Hodgkin's disease. Many regard it as a form of tuberculosis; others think it is an infectious granuloma of

unknown origin; others, again, that the lesions may be caused by different pathologic agents, such as those of tuberculosis, leprosy or rachitis. Many different opinions exist and it is quite impossible to be positive. We see in lymphogranulomatosis, skin lesions, such as those of prurigo, pruritus and many others. The histologic features of lymphogranulomatosis are quite characteristic, and so long as we do not know the cause of those diseases, we have to differentiate them by their pathologic and histologic pictures as strictly as we can. One day, doubtless, we shall learn the cause of mycosis fungoides, but so long as we are ignorant of it, we must insist on a strict differentiation based on histologic and pathologic grounds. We often get a leukocytosis in the blood-picture in mycosis fungoides, and there is a group of cases—I have seen two or three—which present a rather characteristic blood-picture, with an increase of the large mononuclear cells and of the eosinophils, a picture which we never get in leukemia.

PARESIS PATIENTS TREATED WITH INTRASPINAL INJECTIONS OF SAL- VARSANIZED SERUM

A BRIEF REPORT*

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Paresis is such a hideous and destructive disease that physicians are always on the *qui vive* for a hopeful method of treatment. Mercury, iodids and the various arsenical preparations seem to be of very little use as ordinarily administered in paresis and many cases of tabes and cerebrospinal syphilis. This fact led Swift and Ellis¹ to experiment in animals with intraspinal injections of salvarsanized and neosalvarsanized blood-serum. Later these methods were applied to man with results already familiar to you. Swift and Ellis, however, specifically declare that they are presenting their method, not as a substitute, but rather as an adjuvant to the generally accepted forms of treatment.

Concerning the rationale of the method there is perhaps some difference of opinion. Myerson² warns against expecting too much of it, partly on the ground that the flow of the cerebrospinal fluid is centrifugal rather than centripetal as regards the tissues of the central nervous system. At the same time he urges further trial on the basis of his own results. The finding of the treponema in the central nervous system has of course increased the theoretic hopefulness of the method. It is well known that meningococcus antitoxin is effectual only when injected into the subdural space or ventricles. Viton³ thinks that he can increase the permeability of the meninges by intraspinal injections of a weak solution of mercuric cyanid. If, as Mott⁴ believes, the cerebrospinal fluid plays the part of a lymph in the central nervous system acting in part as a nutrient fluid, then it should be able to convey medicinal substances to some, at least, of the brain-cells. This is in agreement with the view of

* Read before the Section on Nervous and Mental Diseases at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Swift, Homer F., and Ellis, Arthur W. M.: New York Med. Jour., 1912, xvi, 53; The Treatment of Syphilitic Affections of the Central Nervous System, with Especial Reference to the Use of Intraspinal Injections, Arch. Int. Med., Sept. 15, 1913, p. 331.

2. Myerson, A.: Intraspinal Injection of Salvarsanized Serum, Correspondence, THE JOURNAL A. M. A., Jan. 31, 1914, p. 396.

3. Viton, J. J.: Reactivation of the Permeability of the Meninges in Treatment of Syphilis of the Nervous System, Semana méd., Dec. 11, 1913; abstr., THE JOURNAL A. M. A., Feb. 14, 1913, p. 582.

4. Mott, referred to in: The Production of Cerebrospinal Fluid, Editorial, THE JOURNAL A. M. A., March 28, 1914, p. 1018.

Swift and Ellis on the direct continuity of the subarachnoid space with the lymph channels and spaces.

Hough,⁵ McCaskey,⁶ Cutting and Mack,⁷ Krida,⁸ Lorenz,⁹ Riggs,¹⁰ and various European medical men have employed intraspinal injections, usually with encouraging results. That the method is not entirely free from danger is shown by Lorenz' two deaths and by some of my own cases. After treating five cases Lorenz changed to direct intraspinal injection of very dilute solutions of neosalvarsan with good effect. In the seven fatal Los Angeles cases, the patients received serum to which neosalvarsan had been added, if I am correctly informed.

I have had thirteen patients under treatment altogether, two of whom received only one intraspinal injection each, and do not appear in the tables. Of these two, one is not improved and the other is dead. This man did not bear salvarsan well when it was administered intravenously, but it was thought best to try an intraspinal treatment. Following this he had a paretic seizure and died in about six hours. He had had one paretic seizure before coming to the hospital last January, followed by pupillary irregularity, increased knee-jerks, mental confusion and disorientation, also persisting muscular weakness. The spinal fluid Wassermann was positive.

In all sixty-two intraspinal treatments have been given with the following technic: Only salvarsan has been used and wherever an intravenous salvarsan injection is shown in the tables the intraspinal injection was given on the following day. A few intravenous injections are indicated which were not followed by the usual intraspinal treatments. As soon as the blood was withdrawn the fibrin was whipped out and the blood diluted with an equal amount of physiologic salt solution, so as to make a fifty per cent. serum. This was left in the ice-box over night, the serum removed the following day and heated at 56 C. for from one-half to one hour, the period varying somewhat. The injection was made with an ordinary glass cylinder, a small rubber bulb being attached to the lower arm of a glass T, so as to make slight pressure when needed. The usual interval before withdrawal of blood was one hour, but this was sometimes shortened to one-half or three-quarters of an hour. McCaskey¹¹ now recommends an interval of only twenty minutes, as he thinks the spirocheticidal power of the blood is then at its height. After some vacillation I decided on 30 c.c. of 50 per cent. serum as a standard dose, an approximately equal amount of spinal fluid being withdrawn. The usual interval between treatments was two weeks.

Of the eleven patients shown in the tables, six show improvement in some respect, not necessarily clinical, one is no better and four are dead. It must be remembered, however, that most of the entire series were well-advanced cases and that paresis is a desperate

disease. In most cases the tendency has been toward a reduction in the amount of globulin and of albumin, in the number of cells and in the spinal fluid Wassermann. For the Wassermann test 1 c.c. of spinal fluid was used except in a few instances in the beginning. Noguchi's butyric acid reagent was used for globulin and for albumin the trichloroacetic acid method of Mestrezat as outlined by Myerson.¹² The cells were counted in an ordinary counting-chamber with a Tuerk ruling.

CASE 1.—White man, aged 43. One year before commitment as insane was a dipsomaniac patient at this hospital. At that time showed slight Romberg and some tremor of tongue and fingers. In September, 1913, had a paretic attack with confusion and probably clouding of consciousness. Came to hospital Oct. 4, 1913, with well-marked speech defect, disturbance of gait and writing, absent knee-jerks, impairment of memory and judgment and slight euphoria. History of chancre five or six years previously. December 15, blood Wassermann positive. Jan. 29, 1914, was given 0.3 gm. salvarsan intravenously, followed in an hour by withdrawal of 60 c.c. of blood. Sharp reaction, chill, rise of temperature, marked disorientation, clouding of consciousness and muscular incoordination. The following day the patient's condition was much improved and he was given 10 c.c. of his own serum intraspinally. No severe reaction followed. Two weeks later patient received 0.3 gm. salvarsan on one day and 15 c.c. of serum intraspinally the following day. On the day after he became very excited, talkative and irrational. He developed a bronchopneumonia, perhaps from aspiration of food, and died on February 23. February 13, spinal fluid Wassermann was positive.

CASE 2.—White man, admitted Oct. 19, 1911, aged 42. Symptoms since August, 1910. Grandiose delusions, later well-marked signs of paresis. Oct. 19, 1912, spinal fluid showed well-marked increase in protein and cells. Patient very weak and stupid, but not bedridden, at time of first intraspinal treatment. Jan. 31, 1914, he was given 10 c.c. of another patient's serum and on February 14, he received 25 c.c. Two days later he was placed in bed on account of increasing weakness, with some stiffness of muscles of back and a partial Kernig sign. February 27, he was given 20 c.c. of serum. Cells had dropped from 300 to 45, but Wassermann was strongly positive. Patient died on March 1.

CASE 3.—White man, aged 28. An early case of paresis. Admitted Jan. 9, 1914, with rather aggressive grandiose ideas, but not much mental disorder. Knee-jerks absent, slight pupillary inequality present. No defect of speech or writing. January 19, spinal fluid showed a slight increase of globulin and 23 cells per cubic millimeter. Both blood and spinal fluid gave a positive Wassermann reaction. First intravenous injection of salvarsan February 6, and first intraspinal treatment on the following day. Eight successive treatments altogether at intervals of two weeks, a total of 3.8 gm. of salvarsan and 200 c.c. of 50 per cent. serum. Patient is a little more tractable and contented; globulin and albumin show a slight decrease; cells remain about the same and spinal fluid Wassermann, which was strongly positive on May 16, now gives a negative reaction with 1 c.c. of fluid.

CASE 4.—Colored man, aged 48, symptoms for two months. Admitted Jan. 23, 1913, with considerable mental disorder, hallucinations of sight and hearing, absent pupillary and knee-reflexes, defect of speech and writing, considerable tremor and muscular incoordination. March 22, both blood and spinal fluid gave a negative Wassermann, perhaps because only a very small amount of fluid was used in the test. At the same time the fluid showed increased globulin and 67 cells per cubic millimeter. Patient had grown somewhat worse clinically by time of first intraspinal treatment, which was given Feb. 7, 1914. He received eight successive treatments at intervals of two weeks, a total of 210 c.c. of 50 per cent. serum from other patients. He shows a slight

5. Hough, William H.: Intraspinal Injection of Salvarsanized Serum in the Treatment of Syphilis of the Nervous System, Including Tabes and Paresis, *THE JOURNAL A. M. A.*, Jan. 17, 1914, p. 183.

6. McCaskey, G. W.: The Autoserosalvarsan Treatment of Syphilis of the Central Nervous System, First paper, *THE JOURNAL A. M. A.*, Jan. 17, 1914, p. 187.

7. Cutting, J. A., and Mack, C. W.: The Intraspinal Injection of Salvarsanized Serum in Paresis, *THE JOURNAL A. M. A.*, March 21, 1914, p. 903.

8. Krida: *Albany Med. Ann.*, May, 1914 (reprint).

9. Lorenz: *Wisconsin Med. Jour.*, 1913, xii, No. 6 (reprint).

10. Riggs, C. Eugene: Juvenile Paresis Treated by the Intraspinal Injection of Salvarsanized Serum, *THE JOURNAL A. M. A.*, June 13, 1914, p. 1888.

11. McCaskey, G. W.: The Autoserosalvarsan Treatment of Syphilis of the Central Nervous System, Second paper, *THE JOURNAL A. M. A.*, May 30, 1914, p. 1709.

12. Myerson: *Jour. Nerv. and Ment. Dis.*, 1914, xli, No. 3, p. 154.

decrease of globulin and albumin, but the number of cells remains about the same, while the spinal fluid Wassermann is still strongly positive with 1 c.c. of fluid. Clinically there is no essential change. This patient has had only one dose of salvarsan, 0.3 gm., intravenously.

CASE 5.—Colored man, aged about 40; symptoms for about three years. Admitted Aug. 23, 1913, with many fantastic delusions, hallucinations of hearing, considerable disorientation and impairment of memory, judgment and power of attention. Pupils rigid to light, knee-jerks exaggerated, speech a little slurring and ataxia present for finer movements. Patient was placed on potassium iodid and mercurial inunctions for a period of several months with a few interruptions. He seemed practically unchanged when the first intraspinal treatment was given Feb. 7, 1914. This was followed by seven other injections at intervals of two weeks, 3.2 gm. of salvarsan being given intravenously and 205 c.c. of 50 per cent serum intraspinaly. The spinal fluid shows a considerable decrease of globulin, albumin and cells and now gives a negative Wassermann even with 1 c.c. of fluid. Knee-jerks are still exaggerated, but pupils react to light both consensually and directly and secondary reaction is also present. The patient's condition on the whole seems improved and he is now working out of doors.

CASE 6.—White man, aged 33. Symptoms for six months. Admitted Dec. 7, 1913, with a history of attacks of bewil-

TABLE OF ELEVEN PARESIS PATIENTS TREATED WITH INTRASPINAL INJECTIONS OF SALVARSANIZED SERUM

CASE 1						
Date, 1914	Cerebrospinal Fluid				Treatment	
	Globulin (Noguchi)	Albumin (Tri-chloroacetic Acid)	Cells Per cmm.	Wass.	Intravenous Salvarsan, gm.	Intraspinal Serum (50 %) c.c.
1/29 .....	++++	.....	36	.....	0.3	10
2/12 .....	++++	.....	17	+	0.3	15
CASE 2						
1/31 .....	.....	.....	300	.....	..	10*
2/14 .....	++++	.....	42	.....	..	25*
2/27 .....	++++	.....	45	++++	..	20*
CASE 3						
2/ 5 .....	+	.....	13	—	0.3	5
2/19 .....	+	.....	40	+	0.3	20
3/ 5 .....	+	.....	50	++	0.4	25
3/19 .....	+	.....	53	++	0.4	25
4/ 2	+	+	40	+	0.6	35
4/16	+	+	37	++	0.6	30
4/30	+	+	45	++	0.6	30
5/16	+	+	64	++++	0.6	30
6/15	+	+	16	—	..	...
CASE 4						
2/ 7 .....	++	.....	30	++++	..	20*
2/20 .....	.....	.....	35	++++	0.3	20*
3/ 5 .....	++	.....	42	++++	..	25*
3/20 .....	++	.....	36	++++	..	30*
4/ 3	++	++	38	++	..	30*
4/17	++	++	44	+	..	30*
5/ 1	++	++	20	++	..	30*
5/15	+	+	40	++++	..	...
6/15	+	+	31	++++	..	...
CASE 5						
2/ 7 .....	.....	.....	120	+	..	15*
2/20 .....	.....	.....	80	++	0.4	25
3/ 5 .....	++	.....	50	++	0.4	25
3/19	+	+	32	—	0.6	35
4/ 2	+	+	27	++	0.6	25
4/16	+	+	56	++	0.6	30
4/30	+	+	40	—	0.6	30
5/14	+	+	20	—	..	...
6/15	+	+	20	—	..	...
CASE 6						
Date, 1914	Cerebrospinal Fluid				Treatment	
	Globulin (Noguchi)	Albumin (Tri-chloroacetic Acid)	Cells Per cmm.	Wass.	Intravenous Salvarsan, gm.	Intraspinal Serum (50 %) c.c.
2/12 .....	+++	.....	163	.....	0.3	15†
2/26 .....	+++	.....	23	+++	0.3	20
3/12 .....	+++	.....	46	+++	0.4	20
3/26 .....	+++	.....	33	+++	0.4	30*
4/10	+++	++	27	+++	..	30*
4/24	+++	++	58	+++	..	30*
5/ 8	+	++	47	++	..	30*
5/22	++	++	60	+++	..	30*
6/16	++	++	30	.....	..	...
CASE 7						
3/21 .....	++	.....	36	+++	..	25*
4/ 4	++	++	40	+++	..	40*
4/17	++	++	63	+++	..	25*
4/24	++	++	93	+++	..	30*
5/ 8	++	++	127	+++	..	30*
5/22	++	++	85	+++	..	30*
CASE 8						
3/27 .....	++	.....	30	.....	0.3	28*
4/ 9	++	+	55	+++	0.4	40
4/23	+	+	40	+	0.6	30
5/ 7	+	+	36	++	0.6	30
5/21	++	++	32	+++	0.6	30
6/ 4	++	++	120	+++	0.6	30
6/15	+	+	37	+++	..	...
CASE 9						
3/27 .....	.....	.....	80	.....	0.3	25
4/ 9	++	++	44	+++	0.4	30
4/23	+	+	47	+	0.6	30
5/ 7	Fluid	contained	blood	.....	0.6	28
5/21	++	++	47	+++	0.3	30
CASE 10						
3/27 .....	.....	.....	...	+++	0.4	25*
4/18	++	++	67	+++	..	30*
5/ 1	++	++	67	+++	0.6	30
5/14	++	++	90	+++	..	30*
5/29	++	++	72	+++	..	30*
6/ 5	++	++	153	+++	..	30*
6/15	++	++	105	+++	..	...
CASE 11						
5/21	+++	+++	190	+++	0.3	30
6/ 5	++	++	51	++	..	30*
6/15	+	+	70	+	..	...

† Mixed serum.
* Other patients' serum.

derment and confusion, during which he would wander away. A very well-educated man who thought he had never contracted syphilis, though he acknowledged exposure. Some mental confusion and disorientation at time of entrance. This never entirely disappeared, though it varied somewhat from time to time. Right pupil larger than left and both rigid to light, both consensually and directly. Knee-jerks exaggerated and speech defective. Dec. 15, 1913, the blood gave a strongly positive Wassermann. Patient was placed on hypodermic injections of sodium cacodylate. He remained practically unchanged at the time of the first intraspinal treatment, which was given on February 13. This was followed by seven other treatments at intervals of two weeks, a total of 1.4 gm. of salvarsan being given intravenously and 205 c.c. of 50 per cent serum intraspinaly. This patient shows a reduction in number of cells, but is worse rather than better clinically. He is more stupid and has had several parietic attacks, once a fainting-spell, once a transient facial hemiparesis, and only the other day an attack with mental anxiety, spasmodic movements, aphasia and clouding of

* Other patients' serum.

consciousness. Pupils are still unequal and rigid, knee-jerks exaggerated and speech difficulty more marked.

CASE 7.—White man, 41 when admitted, May 16, 1911. Said to have been subject to "epilepsy" for four years. At time of beginning of intraspinal treatment patient showed marked mental defect, rigid pupils and absent knee-jerks. Speech was somewhat defective and patient very untidy. The first treatment was given March 21, 1914, the last, May 22. Altogether patient received 180 c.c. of 50 per cent serum, but no salvarsan intravenously. Following the sixth and last injection he vomited and had a moderately high temperature. The next day he became very stupid, had a general convulsion and passed into coma. At this time the pupils reacted moderately to light, but knee-jerks could not be elicited. Neck and back muscles were somewhat stiff. Coma continued, the lungs gradually filled up and patient died on May 25.

CASE 8.—White male, age unknown, but probably about 40. "Overheated" two years before commitment, active symptoms about two weeks before. Admitted Jan. 30, 1914, with considerable mental disorder, grandiose delusions and a history of violence. Left pupil much larger than right and both rigid to light. Knee-jerks reduced, speech and writing very defective and considerable ataxia in certain muscles. First intraspinal treatment March 28, 1914, last on June 5, six being given altogether. Total amount of salvarsan injected intravenously 3.1 gm. Total amount of 50 per cent. serum 188 c.c. There is now a perceptible decrease in the amount of globulin and albumin, but cells remain the same and the spinal fluid Wassermann is still strongly positive. The left pupil is still large and rigid, but the right reacts sluggishly to light. Knee-jerks are present, but not easily elicited. Facial tremor and speech defect are still present and patient's mental condition seems practically unchanged.

CASE 9.—White male, aged 37 when admitted June 4, 1913. Symptoms for two years. Time of infection not known. Delusions of wealth and grandeur and considerable mental defect. Left pupil larger than right and both rigid to light. Right knee-jerk absent, left increased. Speech and writing defective, facial and digital tremor present. No improvement up to time of first intravenous salvarsan injection, which was given March 27, 1914, the first intraspinal treatment being administered April 10. There were four such treatments altogether, with a total of 113 c.c. of 50 per cent. serum, and five salvarsan injections with a total of 2.2 gm. Patient did not seem to bear salvarsan particularly well and it always made him sick. The intraspinal injections did not seem to inconvenience him until May 22. Following the treatment of that day he vomited repeatedly. The next morning he attempted to get up, but was sent back to bed. About 4 p. m. his axillary temperature was 105.4 F. and he was quite stupid. Later he became comatose, but made spasmodic movements of arms, hands, and head. Back, neck and abdominal muscles were moderately stiff and pupils unequal. There had been a reduction in the number of cells in the fluid, but no improvement otherwise. The patient died May 24.

CASE 10.—White man, aged 38 when admitted Aug. 22, 1913. Duration of symptoms at least two months, but probably much longer than that. Many expansive delusions with euphoria. Pupils rigid to light, knee-jerks elicited only with reinforcement. Very considerable ataxia present, speech and writing both very defective. No improvement up to March 27, 1914, when 0.4 gm. salvarsan was administered intravenously. Patient felt a little sick afterwards, but no marked reaction followed. He received only one other dose of salvarsan, 0.6 gm. May 14, or a total of 1 gm. There were five intraspinal injections, 145 c.c. of 50 per cent. serum being administered altogether. There has been no noticeable improvement in any way, but further treatment might bring about a remission.

CASE 11.—White man, aged 27, admitted April 13, 1914, with marked excitement and history of expansive delusions. In January irritable, absent-minded and restless, later excited, irrational and euphoric, with visual and auditory

hallucinations. Pupils sluggish to light and knee-jerks exaggerated. Wassermann strongly positive in blood and May 11, also in spinal fluid, with a large increase of globulin and albumin and 240 cells per cubic millimeter. May 21, patient received 0.3 gm. salvarsan intravenously. May 22 and June 5, he received 30 c.c. of 50 per cent. serum or a total of 60 c.c. Globulin and albumin have decreased somewhat, cells have dropped to 70 and spinal fluid Wassermann is less strongly positive. Pupils are more active and patient is a little quieter than he was.

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RESULTS OF ONE HUNDRED INJECTIONS OF SALVARSANIZED SERUM*

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The passing of parasyphilis is an accomplished fact. Fournier believed that this postsyphilitic condition was capable of evolving a series of diseases any of which might exist independently of an antecedent syphilis. While the truth of this conception has been generally accepted, yet its range has been very generally restricted. The chief expression of this so-called parasyphilitic state is seen in paresis and tabes. Mott believes that Erb's spinal paralysis and certain cases of amyotrophic lateral sclerosis may be regarded as postsyphilitic dystrophies. Wilson refers to Dejerine's statement that 20 per cent. of tabetics show some form of muscular atrophy, and says that there is evidence that progressive muscular atrophy is a parasyphilitic affection. While 20 per cent. of tabetics develop primary optic atrophy, (Norris and Oliver), and perhaps 4 per cent. of paretics, yet without doubt it can occur alone as a postluetic disease. Nonne agrees with Fournier that epilepsy may be a parasyphilitic manifestation; it may arise in middle life, last for years, and prove absolutely intractable to antisiphilitic treatment.

There are three distinctive characteristics of so-called parasyphilitic disease:

First, time incidence; the cases rarely occur before from eight to fifteen years after infection, yet cases have been known to appear as early as one and a half and as late as fifty years; in congenital syphilis they usually manifest themselves at puberty, although they may occur very early or as late as the fourth decade. Müller has reported two virgins who became paretic at the ages of 42 and 43 respectively (Wilson).

Secondly, the primary, secondary, or even tertiary manifestations are, as a rule, insignificant in those patients who are destined to develop paresis and tabes. Out of forty cases of tabes 62 per cent. showed only a primary sore after the infection, (McIntosh and Fieldes, Head and Fearnside). Mott found tertiary manifestations very rare in five hundred post-mortems made on general paretics.

Thirdly, the development of postluetic symptoms after a most vigorous and radically administered anti-

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luetic treatment. According to Fournier, "If the virus extends itself in severe primary or secondary manifestations there is less tendency to parasyphilis."

According to Keyes, if the lesions of syphilis are grouped according to the tissue affected, syphilis of the nervous system is its most malignant manifestation. Out of twenty-five hundred cases he found 20 per cent. to be afflicted with this form of the disease. Nervous syphilis, whether it be of the non-degenerative or degenerative type (paresis and tabes) is due to the direct action of the *Spirochaeta pallida* on the affected tissues, nervous or non-nervous. When we speak of the non-degenerative type we refer to the gummas or the diffuse gummatous infiltrations of the meninges, or of these infiltrations around the blood-vessels of the brain or cord, or of syphilitic endarteritis; while by the degenerative form we mean the so-called parasyphilitic states arising from a primary degeneration in certain groups of neurons, namely, the exogenous fibers of the posterior columns in tabes and "the cells of the cortex with the interconnecting tangential fibers" in paresis. Thus it would appear that the toxins of syphilis manifest a selective action for definite nerve tracts. Both of these forms of nervous syphilis may occur in the same patient.

Nervous syphilis is a grave disease. In Keyes' 504 cases of this affection, 60 patients died and 175 were more or less permanently disabled. It is the degenerative type (paresis and tabes) that has proved so peculiarly intractable to treatment. A neuron once degenerated is hopelessly destroyed, and unfortunately these cases usually come to the neurologist after the central nervous elements have become seriously involved. The most that can be hoped for from treatment is an arrest of the degenerative process and the utilization, to the utmost, of the healthy neurons that remain.

Our therapy in the past has been inefficiently directed. We have failed to reach with our spirocheticidal solutions the elusive spirochete which is intrenched in the neurons themselves. There is much difference of opinion as to the anatomic facts concerning the circulation in the central nervous system; as to what channels the salvarsanized serum traverses in its course from the subarachnoid sac to reach the brain. That it does so is no longer a matter of doubt. Cotton found arsenic in the ventricular fluid after an intraspinal injection in two cases that came to necropsy. Cocain injected in the spinal subarachnoid "causes anesthesia of the entire body, so that by this means it is possible to enucleate an eyeball painlessly" (Campbell). The experiments of Flexner and Amoss with the intravenous injection of poliomyelitic cerebrospinal fluid is certainly suggestive that it may be the medium of infection through which the nervous system becomes involved in syphilis.

It would appear, therefore, that the spinal fluid, which Mott believes is the lymph of the central nervous system, is a purveyor not only of nutrition to the central nervous tissues but also of medication and possibly infection as well.

The glandular ependymal cells covering the choroid plexus secrete the spinal fluid. These cells manifest a selective action; certain substances they allow to pass into the cerebrospinal fluid from the bloodstream; to many drugs, notably mercury and potassium iodid they are impervious; salvarsan after an intravenous injection filters through them in minute but very quickly disappearing quantities. It matters

not how much the general circulation is drenched with mercury and salvarsan, says Stewart, "those nerve cells and nerve fibers which are being destroyed directly by the syphilitic organism and its toxin intrenched behind the pericellular and perivascular lymph-spaces continue to decay." Success, therefore, in the treatment of degenerative syphilitic disease depends on our ability to overcome the resistance of the choroidal ependyma to the transmission of spirocheticidal drugs. Once accomplish this transit from the vascular to the nervous system, says Harris, and the therapy of nervous syphilis will be a simple matter. Moreover, he has no doubt but that ultimately Ehrlich will discover such an agent.

It is no longer a question of the advisability of the intraspinal injection of spirocheticidal solutions into the spinal and cranial subarachnoid space, but of the drug to be injected and the relative merits of the *in vitro* and *in vivo* methods. It is claimed for the former, whether the neosalvarsan be dissolved in the patient's own serum or spinal fluid or in distilled water, that the solution contains more arsenic and is more actively spirocheticidal. We do not believe, however, that this compensates for the greater risk incurred by the patient. After the tragedy which has followed in its wake, the preference for this method by many, even such investigators as Marinesco and Ravaut, over the safer and equally effectual Swift and Ellis process, is to us unjustifiable and inexplicable. Lorenz reports five cases, in two of which the patients died and in all of which very alarming symptoms followed the injection of salvarsanized serum *in vivo*. This is the first record we have seen of fatal results following the Swift and Ellis method. In our 100 injections, never, with one exception, a case of aseptic meningitis, have we had cause for anxiety.

Dr. Ayer of the Department of Neurology, Massachusetts General Hospital, reports 126 serum injections without any untoward results. In over 200 injections administered at the Boston City Hospital by Dr. Sanborn there were absolutely no ill effects. Dr. Coriat states that in the clinical work done by him no bad results have followed the injections; that clinical and serologic improvement was apparent in nearly every case. Swift and Ellis have had no unfavorable results. The former in a personal letter (to Dr. Hammes) so states and says that their occurrence can only be accounted for on the ground of faulty technic.

Peterson and Stephenson have recently reported some notable results in the treatment of nervous syphilis by what they call the intensive treatment—neosalvarsan intravenously and mercury by inunctions. Their purpose was to obtain a cumulative effect of the drug, that is, "before the activity of the drug was lessened by excretion, more was administered, and in this way the patient, by a process of gradual establishment of tolerance, became saturated with the drug in such a manner that the usual untoward effects of the same were avoided." The method adopted by them was to inject intravenously every third day for five injections 0.45 gm. of neosalvarsan. In tabes, taboparesis and paresis and other severe affections, inunctions of mercury were administered on the days the patients did not receive salvarsan. Of fifteen patients one died; the other cases were uneventful. From the serobiologic reductions in these cases it would appear that the barrier of the choroid plexus was overcome—taken by storm as it were—by this intensive method. In the experiments of Flexner and

Amoss the resistance of the choroid plexus gave way completely after the expiration of ninety-six hours and the virus passed freely.

Dr. Ravaut states that the nervous system is affected in 65 per cent. of the cases of secondary syphilis, even though there be no symptoms aside from a possible headache; an increased cell-count and an excess of globulin determines this invasion beyond cavil. According to Wile and Stokes, 63 per cent. of their cases show evidence in the spinal-fluid of central nervous involvement. Moreover, the absence of the findings indicative of this invasion in a single examination is not conclusive that the nervous system has escaped. Eicke has found the colloidal gold reaction positive in 60 out of 136 examinations, even at times in the absence of lymphocytosis and globulin excess. In some of our own cases there has been neither increase of cellular content nor globulin excess, simply a positive Wassermann of the spinal fluid and blood-serum. Too great emphasis cannot be placed on the importance of the recognition of this early stage of invasion of the nervous system, because this is the one period when the infection can be most successfully overcome. "To determine," says Dr. Ravaut, "the actuality of the nervous disease in what may be called its latent phase, and to make it disappear as rapidly as possible . . . constitutes the true prophylaxis of syphilitic nervous affections."

The following cases are illustrative of the various types of nervous syphilis and fairly represent the entire number of patients whose treatment has afforded the basis for this report.

CASE 1.—J., aged 38, married, cattle-buyer, consulted us Feb. 20, 1914. Personal history is negative aside from lues contracted sixteen years ago, for which he never received treatment.

Three years ago he first felt a tired sensation in the legs; at the same time he noticed a difficulty in starting the flow of urine; about two years ago shooting pains developed in the lower extremities; patient has had to catheterize himself daily for the past twenty months. In February, 1914, the patient noticed a paresis of the right external rectus muscle. During November and December, 1913, he received five injections of salvarsan intravenously and a vigorous course of mercurial rubs with iodid; there was no improvement. At the time of our examination he showed Argyll Robertson pupils, paresis of the right external rectus muscle, loss of knee and Achilles-tendon jerks. The blood-serum gave a negative Wassermann; the spinal fluid was positive; there was globulin excess with 5 lymphocytes per cubic millimeter.

We gave him five intravenous injections of 0.4 gm. each of salvarsan, followed by five intraspinal injections of 30 c.c. of a 40 per cent. solution of salvarsanized serum. After the second treatment the bladder function became normal and he has not since catheterized himself. After the fifth injection the spinal-fluid findings were normal. The paresis of the right external rectus muscle has disappeared; he has gained 11 pounds in weight and feels much improved in every way.

CASE 2.—Mrs. S., aged 42, married. Family history negative. Four children living and well, one miscarriage; menses regular until they ceased six months ago. Fourteen years ago she contracted lues from her husband. Had a short course of mercurial treatments; there were no secondary symptoms. Thirteen years ago she had an attack of acute articular rheumatism; in 1908 she was operated on for right inguinal hernia.

Dec. 6, 1912, patient had a chill with a cold sweat, followed by a severe frontal headache. Twenty-four hours later she became unconscious for thirty-six hours. The urine contained a large amount of sugar and the diagnosis of diabetic coma was made. Neurologic examination, however, showed her to be suffering from cerebrospinal lues. After recovery of consciousness there was severe frontal headache, difficulty in urination, with frequent vomiting spells, which continued for

about three weeks. She complained of a feeling of pressure over the precordial region and vertigo was so marked that she was confined to bed for three and one-half months. During the succeeding two months she vomited frequently, especially in the morning; there was also a diffused frontal headache with occasional vertiginous attacks. This condition, with periods of remission and exacerbation, continued until she came under our care Nov. 8, 1913.

From December, 1912, to November, 1913, she had thirty rubs of mercurial ointment 30 grains each, and eight intravenous injections of 0.9 gm. neosalvarsan, which gave temporary improvement. At the time of our first examination after receiving these eight intravenous injections of neosalvarsan, the serobiologic findings were positive Wassermann in both blood-serum and spinal fluid, with globulin excess and lymphocytosis of 392 per cubic millimeter. Neurologic examination showed right pupil larger than left and irregular; left pupil responded to light and accommodation, right sluggish; knee-jerks exaggerated, no Babinski, no sensory disturbances.

Since Nov. 11, 1913, she has had five intravenous injections of 0.9 gm. neosalvarsan, followed by five intraspinal injections of salvarsanized serum. The reaction in this case was unusually marked, evidently due to her neuropathic temperament, since the pulse and temperature were practically normal and she was promptly quieted by a hypodermic injection of sterile water. There was gradual but steady improvement in the clinical picture. The Wassermann reaction became negative in the blood after the fourth injection and remained so. The spinal fluid gave the following reaction: mild globulin excess; lymphocytes four per cubic millimeter, as compared to 392 at the first examination; the Wassermann was positive only in very large quantities, and became entirely negative after the fifth injection. It is worthy of note that the glycosuria completely disappeared after the third intravenous injection of neosalvarsan.

CASE 3.—C., aged 42, married, merchant, consulted us Dec. 1, 1913. Patient denied venereal disease. Illness began two years ago with loss of sexual power. In October, 1913, patient became depressed and forgetful; made mistakes in his business transactions; had insomnia and night-sweats. He developed delusions of grandeur with marked exaltation; will auto from St. Paul to New York in nine hours; is planning to build a million-dollar hospital, etc. There have been frequent mild epileptiform attacks.

Physical examination negative except for double inguinal hernia. Neurologic examination showed an Argyll Robertson pupil, slight Rombergism, lost knee- and Achilles-tendon jerks. There was a positive Wassermann in the blood-serum, also in the spinal fluid in all dilutions down to 0.05 c.c. There was excess of globulin and 216 lymphocytes per cubic millimeter. The colloidal-gold curve was typical of paresis.

He was given, at intervals of two weeks, nine intravenous injections of 0.7 gm. each of salvarsan followed by nine intraspinal injections of salvarsanized serum. The blood-serum is now negative, as is also the spinal fluid except in large quantities; there is only a trace of globulin and four lymphocytes to the cubic millimeter. The mental condition gradually improved after the sixth injection; the patient is now apparently perfectly normal.

CASE 4.—K., woman, aged 34, married. Personal and family history negative. Husband contracted lues at 20. Six years ago she had several chronic ulcers on her left leg, which persisted for a year, but finally healed under potassium iodid and Fowler's solution. Three years ago there was noticeable some disturbance of vision, and ophthalmoscopic examination revealed a luetic, disseminated choroiditis. About two years ago her husband observed that she was unduly jealous and exceedingly nervous; no other symptoms.

The neurologic examination was negative throughout. The Wassermann in the blood-serum and spinal fluid was positive; no globulin excess; no lymphocytosis. After three injections of salvarsanized serum the Wassermann became negative in both blood and spinal fluid and there was decided general improvement. In a recent communication she tells us that she is feeling perfectly well and is better than she has been for years.

In our series of twenty-four cases we gave 100 injections and in every patient who received over four of these combined injections the Wassermann in the blood became negative except in one instance, a juvenile paretic whose blood is still positive after the ninth treatment.

In 75 per cent. of our tabetics the laboratory tests in the blood and spinal fluid have become normal in every way. Aside from this there has been decided clinical betterment, such as marked relief of the lightning pains, a practically normal return of the bladder functions, and an improvement in the general physical condition and in the gait. Two patients who clinically were typical tabetics, in whom the serobiologic findings were negative before the commencement of treatment, were greatly benefited by these injections.

The results in paresis have not been so satisfactory as those in tabes, probably owing to the fact that most of our paretics were in the advanced stage when treatment began; but it can be said of paresis, as of cancer, that even a temporary amelioration of a disease so hopeless is a success for which to be grateful and not a failure to be despised. A greater number of injections are required before any favorable laboratory changes occur. The clinical improvement is variable; one paretic of the dementing type, after eight injections, had a remission lasting four months, while another of the same class showed no clinical change after nine injections, in spite of the fact that the serobiologic findings have become normal. Case 3 with grandiose delusions (classical type) had a happy outcome both clinically and serobiologically after the ninth injection. Another patient, with frequent epileptic attacks, has had only one mild seizure since the first injection, with a marked improvement in the mental picture; the laboratory tests in this patient showed no change. A juvenile paretic showed some clinical improvement following nine injections; the serobiologic reduction being very slight.

Although cerebrospinal lues usually responds to antiluetic treatment, yet certain cases prove most refractory. It is in such cases that the intraspinal salvarsanized serum injections are especially indicated, favorable results being obtained after other methods have failed. In our series of cases there are four patients with cerebrospinal lues and one with tabes who have improved both clinically and serobiologically under treatment, having received very little or no benefit from intravenous injections alone. This is in accord with the experience of Ayer.

The reaction following salvarsanized serum is usually slight; the temperature seldom rises above 100 F.; generally it is about 99, and the rise lasts from twenty-four to forty-eight hours. Severe headache, chills, vertigo and vomiting rarely occur except in certain cases of cerebrospinal syphilis. This reaction is probably due to the fact that the infection is frequently located at the base of the brain in the region of the medulla, and may be of the type of a Herxheimer reaction. In tabes there is a marked increase of the lightning pains for twenty-four to forty-eight hours, but aside from this of the injection these appear to be greatly lessened. In one of our patients the pains began a few hours after each injection, a phenomenon which Ayer has observed in two cases. The reaction is usually negligible, except that there is an increase in the mental symptoms for twenty-four to seventy-two hours, during which the symptoms of sight frequently predominate.

In only one instance, as previously stated, have we observed any alarming symptoms. This was in a case of acute luetic meningomyelitis developing on a tabetic base. A report of this case was recently made by Dr. Riggs before the American Neurological Association. Twenty-four hours after the fourth intraspinal injection (the preceding three having been uneventful) the patient became restless, anxious, and there were slight muscular twitchings; temperature and pulse normal. Four hours later the temperature was 104.2, pulse 100, and there was complete unconsciousness which lasted three days. Neck and back were rigid, Kernig present, and there was every indication of acute, suppurative meningitis, but the spinal fluid was sterile. The condition gradually cleared up and the patient is much better than preceding the injection.

Here was evidently an instance of an aseptic chemical meningitis. Lorenz reports a death following such an injection; the spinal fluid showed marked lymphocytosis with globulin excess and he believed the fluid to be non-bacterial. To us this case is most suggestive of an aseptic meningitis. The possibility of an aseptic meningitis, presenting all the characteristics, clinical and pathologic, of the acute suppurative affection without the infecting organism, following the introduction of a foreign serum into the spinal canal, has been pretty clearly demonstrated. Our own case, and it would seem to us that of Lorenz as well, shows that the same alarming symptoms may follow the use of salvarsanized serum.

We use Lange's colloidal gold test as a routine procedure in connection with all our examinations of the cerebrospinal fluid. We believe it has a marked corroborative value. We have found this reaction in paresis and tabes to be definite and characteristic, particularly so in paresis. A positive reaction has taken place in all of our tabetics. A case of tabes, in a professional man with no mental symptoms whatever, gave the curve of paresis; after the serobiologic findings became practically normal this curve remained unchanged. In none of our paretics has it undergone any modification, notwithstanding marked serologic improvement. According to Miller and Levy, the colloidal gold reaction is inconstant in secondary and tertiary syphilis, the positive reactions observed in tabes and cerebrospinal syphilis are not characteristic, but they believe that the paretic curve is "sufficiently constant" to justify its use as an aid in the differentiation of this disease from those with which it might be confused.

CONCLUSIONS

1. Clinical improvement and serobiologic reduction usually go hand in hand.
2. The report of cases without their associated laboratory reactions is unscientific and valueless.
3. The intraspinal use of salvarsanized serum, as conceived and elaborated by Swift and Ellis, is a notable advance in the therapy of syphilitic affections of the central nervous system; it furnishes the one avenue of approach for spirillicidal drugs to the otherwise inaccessible spirochetes.
4. It is a safe procedure in the hands of trained and properly equipped men. Whether it will bear the final test of efficiency, namely, cause pleocytosis, globulin excess and a positive Wassermann in the blood-serum and spinal fluid permanently to disappear, is yet to be demonstrated.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DR. PILSBURY AND DRs. RIGGS AND HAMMES

DR. CHARLES R. BALL, St. Paul: We frequently encounter the statement that salvarsan, as well as mercury, does not penetrate the meninges or get by the choroid plexus. This statement seems to me to be a rather inconsistent one. We know that a large number of deaths have been caused by an encephalitis hemorrhagica, which has followed an intravenous injection of salvarsan, and certainly the salvarsan must have passed through the meninges in order to have produced this severe effect in the cortex of the brain. We are further advised by all of the authorities on salvarsan administration that in cases of cervical myelitis or when a lesion exists in the region of the medulla we must be exceedingly cautious in this administration, otherwise we will get the Herxheimer reaction in the tissues, and death by pressure on vital centers. Recently, after a number of intravenous injections, salvarsan has, also, been regularly detected in the spinal fluid. The amount of salvarsan in the spinal fluid would seem to depend on the intensity with which it was administered intravenously or otherwise. The method of administration of salvarsan is in an extremely experimental stage. The almost infinitesimal quantities which we are able to introduce intraspinally would scarcely seem to be of any great value. If we stop to think we must realize that the blood supplies all of the living tissues in the body; when for any reason this supply is shut off from any part, that part dies. Logically it must follow that any medicament introduced directly into the blood will go wherever the blood circulates. In the working out of our therapy, we should not neglect to use common sense along with our scientific endeavor.

DR. G. WILSE ROBINSON, Kansas City, Mo.: We have been following a policy of "watchful waiting" for a great many years, so far as paresis and tabes are concerned, and the result has been that we have watched our patients until hope was gone. No line of treatment previously used has apparently been of benefit, and I believe that this method of treatment does offer some measure of relief. I have been using it for some time, having made perhaps one hundred injections and treated approximately a dozen cases. Thus far I have had no bad results excepting an occasional headache. In one of the cases I finished my series of injections and the patient, after returning to his home, had a considerable number of convulsions. His wife reported to me that he had convulsions every thirty minutes for twenty-four hours. Later he returned and was under my observation for a considerable time, but apparently his mental condition was all right. He formerly had an Argyll Robertson pupil. His pupil reacted to light, the consensual reflex had recurred, physically and mentally he was apparently well, and his wife has reported that he has since continued well. The reports that we are getting on the results of this method of treatment are, I think, encouraging, and if it offers any hope to a parietic we should use it. If we are careful in our technic there is, I believe, practically no danger.

DR. HENRY F. STOLL, Hartford, Conn.: One case which I have had under observation for a year presents a number of interesting points. In the first place, the patient had what was considered excellent treatment at the time of his initial lesion fifteen years ago, namely, mercury by mouth for two and a half years, and he felt perfectly well. Seven years ago he developed locomotor ataxia, and at the time I saw him he had marked tremor of the tongue and facial muscles and would hesitate a number of seconds before speaking, suggesting bulbar involvement. After his first injection of salvarsanized serum by the Swift-Ellis method he had very severe leg pains. He was given codein and phenacetin, without any relief and in the early evening morphin $\frac{1}{2}$ grain was administered hypodermatically. I was called hurriedly at 11 p. m. and when I arrived I thought he was dead. I never saw a man so near death recover. He had ceased breathing, but still had a fair pulse. Lumbar puncture was done, without relief. After working over him some time, respiration began, but he had to be "reminded" to breathe every few minutes

all night. I supposed he had had an acute bulbar paralysis from the treatment, but Dr. Ellis drew my attention to an article by Dr. Hoover with regard to a point which does not seem to be fully appreciated: that is, that tabetics are very bad subjects for morphin. Dr. Ellis felt sure this was a case of morphin poisoning. The patient was an intelligent man and realized what the outcome of his case would be if untreated, so, at the end of six weeks, treatments were resumed. As a positive Wassermann in blood and spinal fluid persisted, I decided to change from neosalvarsan to salvarsan on Dr. Ellis' advice. The patient had been getting full doses of neosalvarsan (0.9 gm.), but I gave him only a half dose (0.3 gm.) of salvarsan, but a 50 per cent. solution intraspinally. He had very severe pains after the injection, which lasted all night and part of the next day, and in the morning a lumbar puncture showed 4,000 cells to the cubic centimeter. He had a slight Kernig, almost no elevation of temperature, and by night the cells had diminished to 2,000. Cultures were taken and no growth was obtained. He recovered and had no bad after-effects. In all he has received sixteen intravenous and fourteen intraspinal treatments, but both the blood and spinal-fluid Wassermann are as strong as when treatment was instituted. Clinically, there is but little improvement. After the first few treatments he improved a great deal, but he lost ground, which he has not regained, as the result of an enteritis from a mercurial injection.

DR. R. HARVEY COOK, Oxford, O.: I have used intraspinal injections in a number of parietic patients. One feature has not been mentioned in the discussion which I will bring out by citing a case. We know that by the old method, by iodid and mercury, there never was a case of true paresis cured. Now, if there is one case in ten thousand that will be cured or has been cured by injection of salvarsan, it has, in a way, paid for the trouble that has been gone through. We know that there can be very little injury from injection of salvarsan if the blood-pressure is watched, a precaution which should be taken in every intraspinal injection. In parietic patients it is simply an open question whether the salvarsan can reach the brain when injected into the spine. That is a technical point, however, which need not be taken up. I had two cases; one in a doctor whose wife was also a physician and who would not consent to the injection of salvarsan. The other patient received salvarsan and made no improvement whatever, although the Wassermann became negative both in the serum and spinal fluid. The cell-count was reduced to a minimum, but the patient showed no mental improvement. The physician who received no treatment improved remarkably. He was able to go home, resume his practice, and actually did several surgical operations. The improvement was so great that it was insisted that I give a written statement that my diagnosis was wrong. I stood pat, and after almost a year a complete break occurred and the patient went in a hurry. Had it been the other way, the patient who did not receive treatment showing no improvement while the other patient did improve, I would have reported a wonderful recovery had I reported within the year. A factor we should take into consideration in tabetic and parietic cases is that the spirochete may not be actually killed, but sterilized, and thus after a long period of time be able to do damage; but even in such a case we are warranted in giving the treatment, as the danger is minimum.

DR. FRANK R. STARKEY, Philadelphia: The way in which this subject has been handled shows the element of courage that is coming into the medical profession. The fact that Drs. Riggs, Hammes and Pilsbury are from the West may have something to do with it. In Philadelphia we only accept things that have been handed down to us for generations or that have been imported, and to speak of successfully treating locomotor ataxia is tabooed. A little over two years ago I spoke of obtaining good results in the treatment of tabes, in fact of bringing about symptomatic cures. Some of the local medical fraternity were skeptical, but they will discover that the results that I have obtained cannot by any stretch of the imagination be attributed to incidental remission. More than 90 per cent. of the patients in my cases show improve-

ment, and just as good results have been obtained by others who have followed my method exactly. I predicted that the prognosis and the pathology of locomotor ataxia would have to be rewritten. When I said that, I thought it would be a generation before it would be accomplished, but it is already being done. The fact that cases of tabes can be so successfully treated that their reflexes return and all symptoms disappear is sufficient reason for being encouraged in the treatment of this disease. The statement that the intraspinal injection of salvarsan and sosalvarsan is more or less of a sportsman-like affair is, I believe, quite true and the patient is always the game. The large mortality and other untoward results that follow from entering the spinal canal, which can only be done in the dark, is sufficient argument against it. The introduction of any foreign substance into this canal is bound to be followed by bad results. I am firmly convinced that the time will soon come when the medical profession will be glad to drop salvarsan.

DR. WILLIAM W. GRAVES, St. Louis: The whole medical world is just now in the business of curing syphilis with salvarsan, but I am not yet convinced of its worth, in any form, as a cure in any period of human syphilis. The lack of criticism in this direction on the part of many medical men seems to me to be a little short of appalling. There is no analogy between syphilis and any other disease, unless it exists in leprosy. No man can say when the syphilitic is cured, whatever the remedy employed. With due appreciation of the efforts of the discoverer of salvarsan, I believe that the idea that we may cure an infection by the introduction of a substance into the human body, which is utterly foreign to the body, is not founded on sound biologic principles. At most, such substances are remedies acting, perhaps, by stimulating, temporarily, the resistance of the organism, and not as sterilizers. Salvarsan does not sterilize the human organism of spirochetes.

This lack of criticism is indicated when everything favorable that occurs following the use of salvarsan, at any period of the disease, is put down as evidence of its worth. In our enthusiasm we are apt to forget that exacerbations and remissions characterize the syphilitic infection throughout its course, and we lose our critical sense when we forget the natural course of the disease, and consider the disappearance of symptoms in syphilitics as evidence of cures, after using salvarsan or any other remedy. There is much evidence indicating that salvarsan takes away from the individual a part of his fighting chance against syphilis. If this is true, then we may at this time predict an epidemic-like increase in paresis and tabes and other nerve manifestations during the next ten or fifteen years. Finger and others have shown that something like four times as many cases of early nerve syphilis occur after the use of salvarsan as occurred under the old methods of treatment. Either the nervous system has suddenly become four times more vulnerable to the virus of syphilis or else it has been made so by salvarsan. Many cases of paresis run a rapid course to a fatal termination after salvarsan, as indicated in Dr. Pillsbury's paper, and recently emphasized by A. Myerson and several others. Now, the man who is a parietic, or has other nerve manifestations of syphilis, is the individual who has a poor tolerance for, or a lessened resistance to, the virus; therefore, if salvarsan lessens the fighting chance of the parietic, it is reasonable to assume that it may do so in the individual who is a syphilitic, though not a parietic. I hesitate to use salvarsan in any form, because it does not seem to me to be rational therapy in the treatment of syphilis, and because of the evidence existing in support of the fact that in the cases in which it seems to do temporary good, it may do ultimate harm, by lessening the individual's fighting chance against the syphilitic infection.

DR. C. R. WILSON, St. Joseph, Mo.: I am skeptical if we are dealing with paresis with salvarsan. During seventeen years of extensive experience in state hospital work on a group of 130 patients, the majority of whom

come from two of the largest cities of our state. I have seen many paretics improve without treatment, go home, and pass some of the most careful examiners for life insurance companies, some of them to stay out a year or two years, sometimes two and one-half or three years, without any treatment except the ordinary institutional treatment of large hospitals for the insane. There was an arrest in development of the disease, an ability to resist, that for some reason caused those patients to improve. Possibly this marked improvement that they speak of is like the improvement in some of the cases I have seen, and every man who has been connected with state hospital work has had the same experience. I hope that something can come of this salvarsan treatment. Unless something does come of that, I am frank to say that I do not believe anything will do any good except, as in the past, good care and treatment. It is a question whether or not that is humane, although it prolongs life. I almost always say to friends of my patients when they ask how long the patient will live, "Sometimes, fortunately, they die in the first stages, but it is far too often that they do not." I hope that the gentlemen who are engaged in this special line of employing salvarsan will continue and I hope for results, but still I am skeptical.

DR. GEORGE P. SANBORN, Boston: I will give some facts concerning the Swift-Ellis treatment as I have applied it in thirty-eight cases of tabes and twelve cases of paresis. Some of these cases were in private practice but the majority were on the Neurologic Service of the Boston City Hospital. The number of injections given in this group of cases is 273. The period of treatment has varied from one month to eighteen months. The interval between intradural injections has varied according to circumstances; in tabes, an interval of two or three weeks, or as soon as the patient has recovered from any unpleasant effects of the last injection; in paresis the urgency of the case is considered, and the injections are given in as rapid sequence as possible. The reactions after intradural injections in paresis have not been so severe or so prostrating as in tabes, hence the intervals were made shorter, without untoward results. One parietic received twelve intradural injections in one hundred thirty-two days; had six weeks rest, and was then given six more injections in fifty-eight days. The reactions in paresis consist generally of little else than a headache. All patients are kept in bed for at least twenty-four hours after each injection.

In both tabes and paresis, I believe the least number of intradural injections to be recommended is twelve. I have not yet seen a case in which normal serologic conditions in conjunction with satisfactory clinical conditions were obtained even with this number of injections. Practically invariably, however, there is definite serologic and clinical improvement. I consider a series of twelve injections a unit, and after a suitable rest, if there are no contra-indications, a second unit should be started. In order to demonstrate the changes which might occur in the spinal fluid after treatment, the Wassermann test, cell-count and globulin test, have been carried out on each spinal fluid at the time of injection. The average drop in cell-count in all cases after the first intradural injection was 54 per cent. The average drop in cell-count in all cases after four or five injections was 74 per cent. In other words, all cell-counts at this time became normal. The Wassermann test became negative in no cases, though in a number it became less strongly positive.

The globulin was less readily affected than the cell-count, but showed tendency to become less strongly positive after a few injections, and in a small number of cases became practically negative. Clinical improvement in all cases of tabes and in early paresis is perfectly definite, but this is left to the neurologist to discuss. There have been no deaths in this group of cases. For the past six months salvarsan has been used exclusively. In the early cases neosalvarsan was used. Febrile reactions amounting to from 1 to 3 degrees occurred commonly after intradural injection in the early cases. The use of freshly distilled water with which to prepare salt solution used in dilution of the serum has rendered febrile reaction a rare occurrence.

DR. C. C. WHOLEY, Pittsburgh: I too, have considerable respect for the spirochete, but it manifests itself differently from the respect which Dr. Graves has for it. I certainly would not stand aside and refuse to interfere with the inroads of this organism when it produces the terrible results which he describes. It is natural that there should be a great many differences of opinion concerning the effect of salvarsan at this early stage of its use. We are treating a great many types of the disease and are recognizing it more and more in its early stages, but there are many things we have yet to discover in the way of differentiation between the particular kinds of treatment and ways in which they are to be used for the different types of the disease. It may be that we will find that there are certain types which will be best treated by adhering entirely to the intravenous method. There are other types which I am sure, judging from reports that have come in and from an experience with about twenty-five cases that I have had, will have to be treated by the combined method of Swift and Ellis, and others will have to be varied with the help of mercury and the iodids. I have used the Swift-Ellis treatment in about twenty-four cases, and the injections have varied from two to eight in each case. The effect on the spinal fluid has been similar to that mentioned by the last speaker—the reduction of the cells, etc. They have always been reduced more than 50 per cent. after the first injection. I do not recall precisely the manner in which they have fallen after that. From a clinical point of view, the improvements really have, in some cases, been rather striking. A man who was having most intense abdominal crises and was in a state of collapse from inability to retain food, in twenty-four hours after injection was eating a good meal and feeling comfortable. Such things encourage us to continue the use of a drug that will produce such tremendous results. A young man came to me with a chancre of two weeks standing. The blood-Wassermann was positive, we found spirochetes in the scraping from the chancre. He was given a dose of salvarsan intravenously. That was three years ago, and repeated examinations of his blood and one of spinal fluid have given negative results. That is the only case in my experience in which we can say that there has been a complete sterilization with one injection.

DR. ERNEST M. HAMMES, St. Paul: With reference to the question about using heterogenous salvarsanized serum on other patients, we have had little experience. We have used it in two cases without definite results. I did not want to give the impression that we were curing our tabetics and paretics. I do not see how any man could use the word cure in any case of paresis, even if he has a complete remission, because we all know that without treatment, remissions of from two, three, ten, fifteen and even twenty years' duration has occurred. This line of treatment, however, will give not only symptomatic relief, but will bring about serobiologic improvement quicker and better than anything else I know of.

DR. L. B. PILSBURY, Lincoln, Neb.: My results would not indicate any decided difference in the effects produced by the autoserum and serum from other patients; in general they do not strike me as being particularly favorable. I have, of course, dealt only with paresis; not at all in this series with tabes or with cerebrospinal lues. I do not assume that the technic has been perfect, but it has been careful. I am sorry that in some cases bad results have followed. I do not know exactly to what extent they were dependent on the intraspinal administration. In the case of one man, however, I feel that his death was due to salvarsan. On certain occasions he showed marked muscular weakness, fainting the first time I gave him a physical examination. He had attacks of partial syncope after each intravenous administration of salvarsan, and died about six hours after the first intraspinal injection. I think death was due to the toxic action of salvarsan. I wish to utter a word of caution on the use of a serum containing much dissolved hemoglobin. It is intensely irritating, and although I used it on one occasion I never shall do so again.

JUVENILE PSYCHOSIS

REPORT OF A CASE *

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The literature on the subject of juvenile psychosis is exceedingly scant, but from the best information available, it would seem that the condition is regarded to be relatively rare. Statistics quoted by Spitzka indicate that one in 70,684 children annually lose their reason.

Personally, I am inclined to believe that it is a very much more prevalent disorder than is usually conceded. I am quite sure that not infrequently a definite psychosis has developed in childhood which was diagnosed by an inexperienced observer as an attack of "nervous exhaustion," "feeble-mindedness" or some kindred malady.

In tracing the medical histories of adult mental patients, I have noted, in not a few instances, that the individual in question had in early youth suffered a similar attack, though of a much milder nature, and I have, on careful inquiry, elicited the interesting information that the former disturbance was characterized by unmistakable mental manifestations.

During the past ten years, I have had under observation seven cases of juvenile psychosis, and I am familiar with three others which occurred in the practice of medical confrères in Cleveland. One of these patients in particular became so unmanageable that the condition finally was made the subject of a probate court hearing. The little patient, a lad aged 14, was committed to the observation department of the Cleveland City Hospital, and I understand has made a slow, though satisfactory recovery.

Many superintendents of state hospitals, to whom I have spoken in this regard, admitted having treated or examined insane children, but most of these cases are unknown to medical literature.

Furthermore, I find in the eleventh volume of the census of England and Wales for 1911, which has just been issued, that the largest percentage increase in the insanity-rate occurred in the case of children under 15 years of age.

It therefore seems to me that the number of children who lose their reason is much larger than the perusal of modern statistics would indicate, owing to the fact that a great percentage of cases are not reported.

Insanity of childhood may occur in very young infants, if we credit the case recorded by Greeding of a child that was a raving maniac at birth. Sachs, however, intimates that this story should be taken with a grain of salt, and I dare say that most of us entertain the same impression.

Attacks of acute mania were observed by Rush in a child of 2 years; by Liebers in a boy aged 5, and Sinkler noted a similar condition in a child of 3 years. Paul Rasmus reported an acute psychosis in a child of 1 year and 9 months. In my experience, it is most commonly encountered between the ages of 10 and 16.

The symptomatology of juvenile psychosis apparently does not differ much from the condition occurring in adult life. In early years susceptible children may become victims of hallucinations, as their sense impressions are deep and lasting. But the youthful

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mind cannot ordinarily construct fixed and systematized delusive conceptions such as we find in the adult, because the child's knowledge does not extend beyond his limited experience, and the large and complicated problems of life are unknown to him.

In all the cases that have been reported, a faulty inheritance stands out as the most potent cause. In the acquired conditions, traumatism of the skull and intellectual overpressure are accorded first place. In my seven cases, four were the offspring of pronounced psychopathic antecedents. Two were the descendants of neuropathic stock, but their mental downfall seemed to be closely related to a severe cranial insult. At all events, the psychosis in both instances followed directly after a severe head injury. In one, the antecedent history, so far as could be ascertained, was negative, but shortly after an attack of diphtheria an acute mental disorder developed. Of these patients, the youngest was 11 and the oldest 16 years of age. Four were boys; three were girls.

Meningitis occurring in early youth, profound emotional strains, fatigue, acute infectious diseases, depraved home surroundings, inadequate nutrition, overstudy at school, cruelty, religious excitement and chorea are elements which must be reckoned with in the etiology of these interesting conditions. One of my patients whose affliction first appeared at the age of 13 is now an inmate of an Ohio state hospital, his case being classified as dementia praecox. Another case was that of a girl aged 14 who developed a definite psychosis during an attack of chorea. The condition ended fatally.

Masturbation can hardly be termed a true causative factor, but I am fully convinced that when practiced to excess it does exert a most baneful influence on the mentality of sensitive youths and is, indeed, the means oftentimes of precipitating states of remorse, depression and timidity which are at least antagonistic to full mental vigor.

I am frank to say that in my judgment the significance of depraved habits and other abnormal tendencies occurring among children is not receiving the attention it deserves. The voluntary appeals of several otherwise promising boys—and girls too, for that matter—who found themselves in the throes of uncontrollable, vicious practices, from which they earnestly wished to escape, has frequently set me thinking. Prudery more than anything else has prompted many physicians to side-track or underestimate these faults, but there is no denying the fact that unnatural habits are demoralizing to psychic health, and are very apt to induce a state of fatigue which, after all, is the first step taken by the nervously unstable toward mental disorder.

The case which I have chosen for the subject of my thesis concerns a young lad, aged 11, who resided in a village suburban to Cleveland. May 10, 1911, I was asked to visit him, and the following information was obtained:

Family History.—The father was a robust man, well-developed, and claimed always to have enjoyed good health. By occupation he was a railway ticket-agent. His parents were still living and well. His only brother for many years had been periodically addicted to the excessive use of inebriating beverages. In 1909, he took a "cure," and since that time he has led a strictly temperate life.

The mother was a rather puny woman, of small frame and stature. From her conduct and conversation, I at once gained the impression that she was at least eccentric, and this presumption was afterward confirmed by relatives and friends

whom I met. She nevertheless regarded herself as well and stated that both of her parents were living and in good health. They resided on a farm in the central part of Ohio. Her father, she said, was active, and working every day. Her mother, however, was known to be peculiar, difficult to get along with, and at the age of 33, was confined for several weeks in a private sanatorium for a mental disorder. Since the advent of the menopause, eleven years ago, she has suffered from recurrent attacks of a maniacal character. For many years she has been actually morbid on religious subjects and has been known to pray for hours. She was the mother of four children, three of whom died at an early age. One succumbed to pneumonia, another to typhoid fever and the other to meningitis.

Personal History.—My little patient was born at full term, the delivery being normal. No instruments were used. During pregnancy, the mother enjoyed the best of health, and was not upset by any undue emotional disturbance. To quote her own words, she was particularly proud and happy at the thought of becoming a mother. As a babe, the patient was robust, and thrived on his mother's nourishment. At the age of 11 months he began to walk and to talk when 1 year old. He was regarded a bright and mentally alert youngster. The period of teething was passed uneventfully, but at the age of 5 years he contracted a lobar pneumonia of the right lung, from which he made a good recovery.

When 7 years of age, he started to school and progressed normally. His teacher, however, had frequently commented on his scrupulosity and hypersensitiveness. He was not quarrelsome, but occasionally exhibited traits of stubbornness, and was easily offended. The usual sports appealed to him but he seemed to hold aloof from the more vigorous, though commonplace contests of youth.

On the whole, he was of the affable type, but not always the obedient and respectful boy his parents had hoped him to be. As he grew older, he became subject to emotional variations. At times, he was actually hateful, unreasonable and on several instances his attitude toward his parents was that of defiance. Then the storm would abate, and a more affectionate, penitent and winsome little fellow would be difficult to find.

The mother remarked that she had in no manner pampered him, but on the contrary, had aimed to develop in him manliness and strength. She voluntarily added that perhaps she had been overzealous in his religious training; that most of the story-books she had given him were of a biblical nature, and that during the past year or so, she had thought that her teachings in this respect were having a most unfavorable effect on him. Many nights, she said, he had been awakened by terrifying dreams, all of which were centered around the religious stories she had told him, or of which he had read. The father, on the other hand, was religiously indifferent, and frequently rebuked his wife in the presence of the boy for what he termed "religious slush." He desired, he said, that his child should have a proper Christian training; that religious matters should be imparted to him calmly, rationally and practically, for he saw danger in the emotional and mystic side of the subject. In this regard I quite agreed with him, as it is well known that overreligious training of the mentally susceptible, or those possessing strong, innate religious instincts, is very apt to end disastrously. Suffice it to say that the parents were at constant variance with each other, and thereby created an environment which was not conducive to the best interests of this mentally unstable youth.

In January, 1911, the patient complained of severe frontal headaches, was sleepless and did not eat well. An optician was consulted who prescribed glasses, but no relief followed. Finally, the family physician took charge of the case and the little fellow gradually returned to what the parents thought was normal. In March, 1911, the family for the first time became concerned as to his mental condition, having noted a decided change in his personality. He lost his former aggressiveness and grew surly; did not wish to go to school and would not attempt to prepare his lessons. For a period of two weeks he remained at home; was wholly indifferent to

his surroundings and would not acknowledge the sympathetic solicitation of his parents.

One afternoon, the boy accompanied his father on a jaunt in the woods near their home. For a while everything went well. Suddenly, they heard a strange noise which frightened the boy and he began to weep and clung to his father with all the strength that was in him. Finally, they started homeward, but the terror-stricken youngster was intensely on the alert, and kept looking in all directions. Near the edge of the woods they approached a large tree which the boy refused to pass. The father endeavored to convince him that his suspicions were unfounded, and that he was safe from all harm. The boy insisted that some one was watching them from behind the tree. Nothing would do but that they should walk in another direction, so they emerged from the woods by a circuitous route. As their home loomed in sight, the lad started to run and when he reached his mother he was completely exhausted.

The family physician, unable to elicit a physical explanation for the boy's distressing condition, proceeded to correct what he termed a toxemia arising from the long-standing gastric and intestinal torbidity. In this connection, it may be said that since infancy this patient was troubled with a persistent and rebellious constipation.

May 10, 1911, when I entered the home, the lad was not approachable, and ran into an adjoining room where he hid himself. He was fearful that I would harm him, and he repeatedly besought his father to take me away. Gradually, I drew near to him, but he persisted in taking shelter behind his father. Finally, he exclaimed that he was not sick, and would not take medicine because he did not need it. A physical investigation was quite out of the question, and none was attempted. I succeeded, however, in obtaining a sufficient insight into his condition and its needs, to realize that, first of all, a new environment should be sought and his case placed in the hands of strangers, preferably, in a hospital. Before I departed, it was agreed that he be taken to Cleveland, to the home of a widowed aunt. A sedative was prescribed, there being no bathing facilities in the home. May 19, 1911, he reached Cleveland, after a short but troublesome journey, and it was necessary actually to drag the little fellow from the train. He was suspicious and fearful of everything he saw or heard.

Immediately I placed a competent nurse in charge, who faithfully carried out a plan of prolonged hot packs, to which he nobly responded. His psychomotor unrest slowly abated and he remained quietly in bed but had little, if anything, to say.

A careful physical examination was accomplished, but no objective abnormality was discovered. He was an exceedingly well-developed youngster, and adequately nourished. No deformities or anatomic stigmata were found. His heart, while excitable in action, was not structurally affected; pulse-rate averaged 90 per minute, and the blood-pressure measured 105 mm. in both arms. The lungs were clear; respiration full and unembarrassed. Nothing noteworthy was found in the liver, stomach or intestinal tract, other than the constipation heretofore referred to. The tongue was still slightly coated and the breath somewhat fetid. No tympanitis prevailed; no rigidity of the abdominal musculature was elicited and no pain or tenderness was complained of. Since his arrival in Cleveland, saline cathartics were used daily, and on one occasion a high enema was resorted to. The urinalysis was negative, with the exception of a heavy precipitate of phosphates. The reflexes, both deep and superficial, responded sharply but would not be considered exaggerated. Surface sensibility over the entire body was well preserved in all of its qualities.

The pupils were widely dilated, but reacted promptly to light and distance. The ophthalmoscopic examination was negative. The senses of taste, smell, vision and hearing were in no wise impaired. The grasp of his hands was strong, and the power of both arms and both lower limbs was vigorous for one of his years.

He had control of all bodily movements, and no incoordination, spasticity, paresis, paralysis, clonus, Rombergism,

Babinski phenomena, or other indications of structural nerve disease were detected.

On the fifth day, May 24, 1911, he entered into a state of pronounced confusion, although I was inclined to believe he was cognizant of much that was going on about him. He totally ignored interrogations; refused to take nourishment and tightly clenched his teeth when a glass of milk was offered him. For hours he would lie almost motionless; would stare into space and apparently was in a state of negativism. We tolerated this condition for forty-eight hours, during which time not a drop of water or liquid food crossed his lips. His bowels were evacuated by enema, and it was necessary to catheterize him. With considerable difficulty he was "tubed" night and morning for three days, after which he reluctantly consented to take his nourishment. This, however, was a tedious process, as he accepted only a spoonful at a time, and each meal consumed almost an hour. Fortunately, he slept moderately well, and was not otherwise disturbed. Patient remained in this condition until about June 10, 1911, when he again began to display signs of agitation and unrest. The sounds of passing vehicles, or the noise of some one entering the home would intensely alarm him. He became quite talkative, would scream for help and would often plead for his father to come and protect him. He was extremely suspicious and all manner of hallucinations were constantly before him. He saw animals crawling over his body and was continually expectorating imaginary small fishes and insects from his mouth. The toot of an automobile horn gave rise to the belief that the police had arrived to take him away. He often thought that some enemy was hiding behind the nurse, and he persisted in commanding her to turn around and keep her hands where he could see them.

The condition for a while was pitiable and no manner of persuasion or suggestion was sufficient to convince him that he was safe from all harm. In his sleep he would mumble indistinct sounds and unconsciously would push aside imaginary objects from his face. Frequently, he awakened with a start and would impulsively get up and look under the bed and between the sheets. At times, he would appear almost panic-stricken; the pulse-rate became greatly accelerated and his body was bathed in profuse perspiration.

Prolonged hot packs were again resorted to, and again such means proved their worth. Little by little his agitation and apprehension subsided, and on the 29th day of June, 1911, a marked improvement was noted and he seemed to be, at last, on the road to convalescence. His appetite returned; he relished his meals and finally expressed a wish for some of his mother's favorite dishes. At night-time, he invariably was restless, but hot baths prior to retiring rarely failed to induce from five to eight hours' sleep. Gradually he began to regain his former poise and control, cultivated a strong attachment for his nurse and displayed a lively interest in his surroundings.

Every now and then some strange or unusual noise would alarm him, but he was now amenable to suggestion, and his fears and suspicions were easily allayed. I had a most satisfactory conversation with this little fellow, July 2, 1911, and I was surprised to discover that he had very little insight or recollection of what had happened during his illness, other than the frightful hallucinations which had so tenaciously haunted him. Once I referred to the Bible, and immediately his face flushed and he was quite alarmed. I quickly dropped the subject, realizing that I was trespassing on dangerous ground. July 4, his parents were permitted to visit him and the meeting was indeed a pathetic one. They were admonished to make no reference to his illness, nor were they to refer in any manner to matters pertaining to religion.

From this time on, the patient's progress was rapid. The nurse took him out for short walks daily, and a friend favored him with automobile rides in the parks. He asked for something to read, and was permitted to peruse certain monthly periodicals. At other times, his nurse or aunt would read to him. He finally deserted his room and spent much of his time out of doors, but care was taken to keep him away from influences which might excite him. He went early to bed and slept fairly well. The baths were continued more or less regularly.

July 18, 1911, he accompanied his father to Wisconsin for a month's stay at a friend's farm. This proved most beneficial, and on August 23, 1911, he returned to Cleveland fully recovered and apparently none the worse for his strenuous experience. He talked freely on most subjects and expressed fond anticipation of getting home to see his mother and other relatives. In the meantime, I had much to say to the parents as to the future training of their son whose mental instability was directly due to causes beyond his control. I have since learned that the lad's misfortune was, after all, a blessing in disguise, as a happy family had resulted, and a new environment had been created which ought to have a favorable influence on the boy's future development.

The father has kept me posted in regard to the boy's condition since he left my observation, and with the exception of a mild recurrence of insomnia; he has continued to enjoy good health, both physically and mentally. I understand he returned to school in January, 1912, and has made up many of the studies in which he fell behind. Three months ago, his father wrote me that the lad was now taking a correspondence course in "cartoon drawing," and was becoming quite proficient. It appears that he has shown considerable aptitude for this kind of work, and I have urged them to permit him to continue it, unless indications to the contrary arise.

The recovery in this instance seems to be complete, but what the future holds in store for this young lad, no one can positively foretell. I believe, however, that the parents have learned that their only son, whom they brought into this world handicapped mentally, must be protected from undue strains and stress, and that their conduct and attitude toward him in the future must be very different from what it has been in the past. If they will do their part, and throw the proper safeguards about him until he has fully matured and developed, it is possible that he may escape a recurrence.

We are in the midst of a campaign of preventive medicine, and it would seem that in psychiatric practice preventive measures, to be effectual, cannot be applied any too early.

My object in bringing this report to your attention is to encourage the publication of all cases of insanity in children, in order that we may have reliable statistics to guide us. When this is accomplished, I feel sure that the prevalence of juvenile psychosis will be found to be such as to justify a definite plan of education which will have for its purpose the recognition of danger-signals and the avoidance of such elements which are harmful and destructive to the mental health of developing youth.

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ABSTRACT OF DISCUSSION

DR. WALTER B. SWIFT, Boston: I recall one case of infantile psychosis that took the form of general paralysis, in which the result of treatment is interesting. A girl about 8 years old had most of the typical signs of paresis, and, as well, a clearly marked state of confusion, with cloudy eyes, drooping expressionless face and inability to think. Her Wassermann was positive. Salvarsan was given and as a result the confusion, facial signs and thinking-power all cleared up. That the organic signs still persisted would lead one to suppose that there were two processes: (1) an old degenerative nerve-lesion and (2) an active process reached by the treatment. The degeneration and the improvement have both persisted since.

DR. FRANK P. NORBURY, Springfield, Ill.: A few years ago, I went over my case records and in over 16,000 mental records there were but about twenty-five cases of genuine juvenile psychosis. I excluded the juvenile type of paresis.

the constitutional degenerative types, the toxic-delirium cases and the border-line compulsory neuroses as seen in children. I considered only those cases which were almost exclusively manic-depressive or allied states, because I believe we must define these cases clinically as genuine juvenile psychosis. When we study many of our cases, we find early manifestations, even in childhood, that are unrecognized. Especially is this true of the depressive rather than the manic phase. I recall one child who showed the manic phase as early as 6 years of age. I had the patient under observation for some time, even after her recovery and return to her home. Eight years have elapsed without recurrence. I now have two depressive cases under observation, both girls and being cared for in their respective homes. In one, aged 11, the question of differential diagnosis is between dementia praecox and an aberrant form of depression. The age of the other patient is 13. The case suggests an organic basis, possibly involvement of the hypophysis and yet on close analysis it would seem also to suggest an aberrant form of depression. Many children and also adult patients have not been studied from the beginning of their troubles, especially during the years of 6, 8, 11 up to the period of puberty. We can get the history of these cases after the period of puberty, but it is the nascent period of childhood which needs observation for the early manifestations in many cases of manic-depressive psychosis. Few patients at this age ever reach the hospital and comparatively few receive the intelligent and prolonged care they deserve.

DR. C. R. WOODSON, St. Joseph, Mo.: A case came under my observation last year in which the child had a pronounced and typical scarlet fever. About six weeks after the initial symptoms of scarlet fever had appeared, I was called to see the patient. So far as the scarlet fever was concerned the child had gotten along well. There had been no kidney lesions, but the patient was in a state of mental and muscular agitation, with pronounced insomnia. The attending physician was disposed to diagnose the case as one of meningitis. There was no rigidity of the neck muscles, Kernig's sign was absent, there was no fever and had not been for three or four weeks. A lumbar puncture was made, but no fluid was obtained, and afterward the case was diagnosed as polioencephalitis. I did not believe that the condition was polioencephalitis, for there was no paralysis; but the child was extremely agitated. It was during the excessively hot weather that prevailed in the middle west. We did not use hot baths in this case, but kept the child almost constantly in a pack at body temperature by means of two sheets which were simply turned over the child, and which, by means of a small vessel of water, were kept at about the temperature of the patient. Sometimes, toward evening when it was a little cooler, it may have brought the temperature down to 97.5, but not very often. After some two or three weeks the child ceased to be noisy and agitated, began to recognize and want its mother. During the time I saw the patient there were no manifestations due to the scarlet fever, the kidneys and skin functioning well. The process of bathing and packing was kept up for one and one-half months. In two months the child made a good recovery. She was a child of normal intellect and good parentage, but was pronouncedly as exalted and excited as any case of manic depressive insanity that I have seen.

DR. T. D. CROTHERS, Hartford, Conn.: In an experience of forty years, in the study of drink and drug neurotics, I have found infantile psychosis, palsies and degenerations very common in the children of such persons. The causes of juvenile psychosis are very often traceable to the toxemias of parents. I have observed that these psychoses change materially at puberty and settle down into some uniform condition, which remains about the same until the climacteric period, when there is an outbreak, and acute and chronic degeneration sets in that never changes. I am inclined to believe that the study of heredity will reveal many of the active and contributing causes of these psychoses. I am not prepared to state what percentage of juvenile psychosis is traceable to this cause, but I am sure the proportion is large.

DR. TOM A. WILLIAMS, Washington, D. C.: Many psychoses exist in children which are overlooked because clinicians are in the habit of ignoring the child's subjective symptoms as expressed in interrogation. I think that is a great error. It is very unwise to put down such a case as one of mere indulgence, allowing it to pass and not analyzing it thoroughly. I believe, however, that quite frequently one will find psychotic conditions in children arising from a purely psychologic source. For instance, a little girl of 11 whom I saw some years ago had become very much disturbed, would not speak to her parents or to other children, and became very violent tempered at times. The whole situation was psychologic in its source and found to be due to the child's idea that she was not loved any longer by her parents. When the condition was rectified in the minds of the parents the girl began at once to improve and returned to school in two weeks. Judging from the frequency with which, in the few cases I have seen, (*Am. Jour. Med. Soc.*, 1912, xi), psychologic factors have been easily found, I should say they must be very abundant, and I should like to appeal to those who see many children that they endeavor to analyze them. For example, last month in Tennessee I saw a child of 6 who was very much disturbed and had been for several years, and yet in that child one could analyze the situation as being due to occurrences which had taken place at the age of 2 and which had discolored the whole life of the child up to the age of 6. This showed itself in the dreams of the child, who, at the age of 6, was capable of extraordinary penetration. Dr. C. L. Greene, chairman of the Section on Practice of Medicine, told me that he was much impressed with the judicial sense of children, and I agree with him.

DR. ALFRED GORDON, Philadelphia: In the cases presented by Dr. Drysdale, Dr. Norbury, or Dr. Woodson, the conditions found are almost identical, which bears out my experience with juvenile psychosis, excluding juvenile paresis and dementia praecox. In psychoses occurring in very young children, I have found almost exclusively, a confusional state. It is true we find some manifestations of mania or of depression, but the cases are essentially those of confusion and delirium. Sometimes we will find a stuporous state, but a state of confusional insanity predominates. I find also that all these cases are acute and temporary, and recover very soon. They are nothing else but confusional states following infectious diseases or any other condition due to an infection of some sort.

DR. J. T. FISHER, Los Angeles: Those who see large numbers of insane people not infrequently find such cases as Dr. Drysdale has cited. I recall seeing six or eight cases at the Psychopathic Hospital in Los Angeles which were very similar. They have excited our curiosity quite a little because of the feeling that we often had that perhaps they were cases of beginning dementia praecox. Some of the patients got well, however, and some of them went into a state which required their being put in a state institution. I see no particular reason why a child should not develop a psychosis as well as an adult, and I am a little surprised to note, in a series of several thousand cases, that we have not had more cases of juvenile psychosis. I do not feel that the cases spoken of by Dr. Crothers necessarily come from alcoholism in the parents. I think that the psychoses of children may result from the same causes as do cases in adults.

DR. H. H. DRYSDALE, Cleveland: Dr. Swift refers to a case of paresis in a child. My experience with this comparatively rare condition is limited to one case which presented the cardinal physical manifestations of the disease. The Wassermann reaction was positive. Mentally this patient expressed no delusions, but on the contrary was stupid, confused and apathetic. Dr. Norbury brings out an extremely instructive point when he refers to the early signs of mental alienation appearing during childhood. If physicians were more alert in recognizing, in children, certain factors which are antagonistic to normal mental development, many a psychosis would undoubtedly be prevented. Viciousness, irritability, lack of control, temper so-called, etc., are often forerunners of mental disaster. The modern treatment of mind disorder

is prophylactic and childhood offers a fruitful field for its proper application. Dr. Woodson refers to the efficacy of hydrotherapy in these conditions. I believe that this is the only treatment. Hot and cold packs will suffice in most cases. Dr. Crothers states that a morbid inheritance is the chief etiologic factor in the psychoses of childhood. It is true, of course, that generally we do find a definite psychopathic taint. On the other hand one of my patients, whose antecedent history was excellent, developed a serious mental disturbance at the age of 13 and is now chronically insane. Dr. Williams refers to the psychogenetic origin of the juvenile psychoses. There can be little doubt but that such is the case, in a large number of instances, not only in the psychoses, but also in the psychoneuroses. When I first saw this lad he was so agitated and disturbed that a psychanalysis was quite out of the question. Should this patient suffer a recurrence and come under my observation again I shall attempt to discover a psychic explanation for his affliction.

BERIBERI

J. M. LITTLE, JR., M.D.

ST. ANTHONY, N. F.

The fact that hens, if fed exclusively on white flour, develop a staggering gait and die with paralysis is known to the natives of Newfoundland and Labrador. It is the custom in North Newfoundland and Labrador, in winter, for the natives to take their hens into their cabins, and to keep them in small coops in the living room. Consequently the natives have a good chance to become acquainted with polyneuritis gallinarum. They say that unless some food other than white bread is given, the hens "get leery and give up" (become dizzy and die).

In THE JOURNAL of the American Medical Association for June 29, 1912, I published a short paper giving the clinical facts that warranted the assumption that beriberi is caused by white flour as well as by polished rice. The fact that beriberi seemed common here, together with the facts as already stated about the hens and the knowledge of the work being done on beriberi in rice-eating countries, led me to wish to repeat the experiments being made with rice, but to use white flour instead. It seemed impossible to get fowls and guinea-pigs for experimental purposes at St. Anthony. Therefore, I decided to do the experiments where the facilities were better. Mr. W. Richard Ohler, who at the time was one of my assistants, kindly undertook the work, and was extended the privileges of the laboratories of the Harvard Medical School, with the endorsement and kind cooperation of Professor Rosenau and Professor Wolbach.

The object of this paper is to present some statistics with regard to beriberi in this country, together with such observations and conclusions as I have made, as introductory to the work done by Mr. Ohler.

HISTORY

The first references to beriberi in Newfoundland that I find are in the reports of cases on the Newfoundland Grand Banks by Putnam of Boston and Birge of Provincetown (1898). A large number of the fishermen even on American vessels were Newfoundlanders and in this report we find that there were cases among those making "shore trips." Dr. Grenfell, having encountered the disease in Labrador among those on vessels and those living on shore, made enquiry of Dr. R. A. Brehm, Medical Health Officer of Newfoundland, concerning the incidence of

the disease. Dr. Brehm forwarded a report of thirty-eight cases of well-marked beriberi observed during the two years previous to 1908 by Drs. O. V., and S. S. Smith. There were a few other cases reported. Since 1907 I have constantly seen the disease and, I think, with increasing frequency.

DISTRIBUTION

Beriberi among deep-sea fishermen is uncommon except on vessels in which the standard of diet is low. On American fishing-vessels, even on the halibut catchers which are out for long periods, beriberi is practically unknown; but these vessels are well supplied with foods that we now know prevent beriberi. On Newfoundland vessels in the shore fishery, symptoms of beriberi are common and the severer forms not uncommon. The food on these vessels is practically the same as that of people living ashore and consists continuously of tea and bread, fish, salt meat and occasionally duff with raisins. Some have potatoes and turnips at times. It is on the vessels that go north away from the base of supplies and the land of vegetables, that we find beriberi. Also it is "down north" that we find beriberi among the people living on shore, but always among those who on account of custom and ignorance or their economic and geographical position are, at certain times of the year, almost entirely dependent on white flour for food. So far as I know, the Eskimo and Indian do not have beriberi but they eat plenty of fresh meat.

In the last 5,000 cases seen in the out-patient department of the St. Anthony Hospital, the diagnosis of beriberi has been made 220 times. One hundred and seventy-five of these cases were in men and forty-five in women. Ninety-three patients have been admitted to the hospital. Of these, seventy-five have been men and eighteen women. Of these eighteen women, in one the disease came on during pregnancy and was cured before childbirth; in five it came on suddenly and soon after childbirth. In one case the child died of an unknown cause before admission to the hospital.

The average age among the males was 34 years 4 months; the oldest was 77, the youngest 15. Of the females, the oldest was 57, the youngest 12, and the average age, 28 years 2 months.

There have been six deaths, all in men, all in acute cases from heart-failure or failure of respiration; three each in so-called "wet" and "dry" cases. One woman discharged thoroughly recovered, died at a later date of the same trouble.

The average time from beginning of symptoms to entering hospital was seventeen weeks, but the significance of this figure is very vague, as cases were admitted in all stages of the disease, and it is difficult to determine the time of onset as the preliminary symptoms are so indefinite.

Shortness of breath was a marked feature in 58 cases, and irregularity, increase in dulness on percussion, or murmurs of the heart were noted in 57. Edema was noted in 28 cases. There was paralysis of the lower extremities or some of the leg muscles in 83 cases and 39 of these showed some affection also of the upper extremities. In only three histories in the series were no disturbances of sensation noted and I am inclined to think this is due to omission in the history taking. Forty in the series gave definite history of previous symptoms or attacks.

Only one necropsy was obtained in a man sick a very short time who died of paralysis of the respira-

tory organs. Besides cloudy swelling of the kidney, the necropsy revealed nothing. The nerves were not examined microscopically.

ETIOLOGY

It is a lately accepted fact that beriberi in its commonest and most well-known form, among rice-eating people, is due to the absence of certain necessary elements in the diet. These have been called "vitamins" (by Funk) and when "milled" rice is used, these vitamins are absent. It is not so generally recognized that in a wheat diet, restricted to "milled" flour the vitamins are also absent and the same disease develops with the same certainty.

Whether or not polyneuritis gallinarum and beriberi are identical, the study of the former (notably the experiments of Frazer and Stanton) has been the means of establishing correct knowledge of the etiology of beriberi. Although in recent text-books beriberi is still classed among the infectious diseases, the infectious theory of the disease has been given up.¹ (Action of recent International Medical Congress in London.)

It may not be possible to include all forms of polyneuritis in one group under the heading "beriberi"; as, for instance, that form so closely associated with malaria and that reported from Brazil, in which we are assured the diet is lacking in no particular. The time has come, however, when a group should be recognized and separated, in which polyneuritis is caused by a deficiency of this particular substance in the diet.

The old idea, still very prevalent, that ship beriberi is a different disease from true beriberi is false. The deficiency in diet, the actual cause, is the same. Moreover, so-called ship beriberi is more frequent on land than on ships. The fact that beriberi arises through a deficiency in rice or flour, or in lack of potatoes² makes no difference except in degree, and the maintenance of this old nomenclature obscures the etiology and retards knowledge as to the cause, prevention and treatment of the disease.

Apparently, the multiple neuritides should be classified broadly under three headings: 1, Toxic, which would include that due to alcohol, diphtheria, etc.; 2, "deficiency" or "avitaminic," and 3, cause unknown. In this last, the burden of proof would now seem to rest with those who would exclude a multiple neuritis from Groups 1 and 2. We do not yet know the way in which the lack of these vitamin substances acts or whether the disease caused by their absence is "toxic" or not.

Beriberi is then, one of the deficiency diseases and develops whenever man is, for sufficient time, deprived of certain elements of his diet which have been called "vitamins." These vitamins are present in various foods. In different parts of the world men depend on different foods for this supply. Among rice eaters who use milled rice, and not enough of other forms

1. Motions adopted by the section of Tropical Medicine and Hygiene of the Medical Congress held in London, August, 1914:

"B. (a) That the section is of the opinion that beriberi amongst natives who live principally on rice is brought about by continuous and too exclusive use of rice submitted to a too complete milling, which removes the cortical and subcortical layers of the grain.

"(b) The section urges all authorities charged with the health of native communities to restrain by every means in their power the use of this rice in the dietary of coolies.

"(c) In view of the proved non-infectiousness of beriberi the section suggests that all port and sanitary authorities should abolish foreign quarantine and other destructive measures against the disease."

Section (c) in the above is referred to. I believe this was also adopted by the congress as a whole before they adjourned.

2. Holst, A.: Christiania, Personal Communication.

of food, it develops from the lack of these vitamins which have been removed from the grain. Among wheat eaters who do not eat enough of other forms of foods (for instance meat, potatoes, beans, etc.), beriberi develops when milled wheat, the ordinary fine flour, is used.

Contributory to the development of the disease at any time, may be and often is, some added stress such as exposure, trauma, hardship, chilling, pregnancy, overcrowding, bad hygienic conditions, infection or intercurrent disease. In this respect, beriberi does not differ from many other forms of disease.

In the following paragraphs the symptoms, diagnosis and treatment of the disease beriberi as seen in North Newfoundland and Labrador will be discussed. The observations and conclusions may or may not be in accord with those of other workers in the same field; the point which I wish to make is that they are drawn from personal observations of actual cases as seen in this locality.

SYMPTOMS

The time of onset depends on the length of time a person has been on an insufficient diet and the degree of insufficiency in vitamin of that diet. Endemic, seemingly epidemic, and seasonal outbreaks depend on variation in food-supply. It may occur at any time in a people or in persons among whom nutritional instability is chronic. Among such, what has been called the incomplete or rudimentary form is more common than is recognized. It is better not to regard these patients as showing a separate form of the disease but as suffering from premonitory symptoms and in danger of severer attack.

These premonitory symptoms are due mainly to functional derangement of nerves or groups of nerves, with special susceptibility of the vagus and nerves of the lower extremities. Single or unusual nerves may be first or only involved. For instance, in one young man, the earliest symptom complained of was paralysis of the right sixth nerve. This was followed by double optic neuritis. A decompression operation was done. Later he developed typical beriberi of the dry form which went an ordinary course to complete recovery under proper treatment. But it was found that he had previously had night blindness which up here is so common that he had not thought to mention it. The importance of the peculiar and protein paresthesia as indicating nutritional fault and danger of severer involvement, is not appreciated by the people, as familiarity breeds contempt. Nor is their significance or frequency ordinarily known to the physician. They may be fairly common when the later manifestations of the disease are unknown or unrecognized.

The more advanced stages are well described in the various text-books and do not differ essentially in symptoms from what one would expect from the "regressive changes" in nerves, whether in beriberi or other forms of multiple neuritis.

The clinical course will depend on whether the nerves of the extremities or those to the more vital organs are most affected, and on the extent of the affection. In the dry form there will, almost always, at some stage, be more or less edema of the most affected parts, as is seen in so many forms of peripheral neuritis. It may be very slight and transient. In almost all cases there will also be tachycardia and shortness of breath due to functional involvement of the vagus and pneumogastric or phrenic. If the vagus,

pneumogastric or phrenic bears the brunt of the attack, there may be uneasy precordial sensations followed by tachycardia and shortness of breath, followed by the usual signs of broken compensation, as the involvement of the nerve advances beyond the functional stage. This constitutes the "wet" form, and, in rapid onset, the culminative, acute, pernicious or cardiac form. Except when this last is extremely acute, there will almost always be observed some involvement of the extremities.

There are, then, two forms of edema; one primary, due to involvement of the peripheral nerves of the extremities, and another, secondary, due to broken heart compensation following involvement of the vagus. In the most pernicious variety, without edema, the respiratory nerves are probably at fault. Some edema may be due to intercurrent kidney affection.

The disease may be clinically divided in another way into two stages: (1) active, in which there is nutritional fault and nerve involvement is taking place or progressing, with all its various symptoms; (2) passive, in which the patient suffers only from disabilities due to the damage already done to the nerves with resulting changes, and in which there is nutritional sufficiency and no further nerve degeneration taking place. In the forms in which the extremities bear the brunt of the attack, degeneration can go to greater lengths than in the other forms without danger of death or such alarming symptoms. Regeneration of these nerves and their associated muscles is no quicker in this than in other forms of peripheral neuritis with paralysis, and these are the protracted cases.

DIAGNOSIS

The diagnosis is easy in most cases, especially when the disease is common or when there is an outbreak. The important thing is to recognize the premonitory symptoms and atypical forms. The possibility of intercurrent disease must be kept in mind as well as the other deficiency diseases. Whatever the underlying cause of scurvy, and it is probably similar, the two diseases should not be confounded. Whenever there is nerve involvement, as shown by functional or degenerative symptoms, beriberi or avitaminic neuritis should be diagnosed. Some symptoms associated generally with scurvy, are probably rather due to this form of neuritis; such, for instance, as night-blindness, edema of the legs without hemorrhages and perhaps shortness of breath. If involvement of the nerves is kept in mind as the criterion, there will be little difficulty in differentiation, even when the diseases are concomitant, as may be the case.

The well-known toxic causes of neuritis are generally easily eliminated. Postdiphtheritic paralysis sometimes may be difficult to exclude. One young man, who had had in the past the early symptoms of beriberi, who had lately had ulcerated sore throat in which bacterial examination had failed to show diphtheria though there had been diphtheria in the vicinity, came to hospital with signs of bulbar involvement, unable to swallow or chew. There was known to be a case of syphilis in his family and his symptoms rapidly cleared up under large doses of potassium iodid.

Poliomyelitis is differentiated in the same way as other forms of peripheral neuritis and presents no special difficulties. In older patients with ataxic symptoms, the rapidity and mode of onset should be considered and the general course of the trouble. After all, it is only in the atypical cases, those involving

special and unusual groups of nerves, that difficulty arises. In these one should watch for the slightest sign of involvement of the more commonly affected nerves. The clinical course will clear up the difficulties.

PROGNOSIS

This depends on how much damage has been done, to what nerves, in what length of time, and the ability to procure the elements needed in the diet of the patient. The danger is great while the diet is defective, while the nerves to the heart and lungs show most involvement, and when the onset has been rapid. Recovery will be complete if proper diet is instituted and maintained, no vital nerve has been affected sufficiently to cause death, and no other disease carries off the patient. If former habits of diet are resumed, recurrence in aggravated form is probable.

TREATMENT

Whenever an unbalanced diet is used, an attempt should be made to regulate it better. When people depend mainly on bread, whole-wheat flour should be used. Fresh meat, vegetables and other articles should be added when possible. Such foods as beans should be used when fresh meat and vegetables can not be obtained; and attention should be given to the method of cooking so that the preventive substances are not destroyed. Canned goods probably have these destroyed by heat.

A patient with beriberi, whose symptoms have not gone so far as to be immediately dangerous, if put on a diet including fresh meat, whole-wheat bread, beans, peas, macaroni and potatoes, will, within ten days, recover from all functional symptoms. His perfect recovery will depend only on the length of time necessary for the regeneration of the nerves already affected, together with the correction of such pathologic conditions of deformity, wasting, anemia, etc., as have supervened.

Absolute rest in bed is important at first in all cases. During acute attacks, such supportive treatment as is indicated should be instituted, along with the attempt to introduce such food as will supply the lacking elements. When the stomach rebels, milk from mash-fed cows should be used. Digitalis must be used with care. Strychnin and quinin seem indicated by clinical and experimental observation (Cooper). All electric treatment and massage should be delayed until such time as progressive degeneration has ceased.

While the antineuritic substance is curative in minute quantities and has been separated, its preparation is too complicated at present for general use, and the use of proper foods is still the best way. In the severer cases, such a preparation would be life saving. It is to be hoped that in the future, it may be prepared in some stable form capable of distribution.

There is, possibly, a broader significance to the subject of deficiency neuritis than may be apparent to the average practitioner. Beriberi is thought of as a sort of extra disease that he doesn't have to bother with, a sort of tropical disease he will never see. It is easy enough to recognize in its "overforms," such as we see when a diet is obviously one sided. The vaguer symptoms and results may be present when the diet is not so considered. Meat is getting dear, however, and foods are coming to be more and more denatured by modern methods. I do not know whether affec-

tions of the nerves are correspondingly on the increase, but the text-books are significantly silent or unenlightening on the etiology of functional and degenerative diseases of the nerves. It may be that the recognition of neuritis as a deficiency disease, due to a one-sided diet in which ordinary white flour is the principle factor, may clear up some previously unexplained cases of functional nerve trouble, neuritis, and trophic disturbance.

The cause of beriberi among rice eaters is an accepted fact. It is not generally recognized among wheat eaters. Because of this fact Mr. Ohler has attempted to repeat with wheat, some of the experiments which have been accepted by the profession as proof in the case of rice. A report of these experiments will be found in the *Journal of Medical Research*.³ Their full significance remains to be worked out.

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THE PATHOLOGIC AFFINITIES OF BERIBERI AND SCURVY

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INTRODUCTION

During a recent visit to South Africa and Rhodesia with General Gorgas, advantage was taken of the favorable opportunities there for observing scurvy. A number of post mortems were made and some pathologic material collected.

I was struck at the first necropsy by the remarkable appearance of the heart, for it suggested at once the picture seen in a well-marked case of right-sided hypertrophy and dilatation in beriberi.

Since my return, I have examined microscopically the vagus and its branches, as well as the heart muscle, in some of the cases, and found degenerative changes of the same type seen in beriberi.

Each necropsy presented the same cardiac lesion, and following up the observations, a number of clinical, pathologic and epidemiologic observations have been made which show family relationships between scurvy, a classical example of a food deficiency cachexia, and beriberi, and also as Watkins-Pitchford¹ pointed out in 1912 with certain other members of the group of dietetic cachexias.

At one extreme is rickets, a type of pure "osteocachexia," to use Watkins-Pitchford's term; at the other extreme a pure "neurocachexia," such as polyneuritis gallinarum. Between these two types are scurvy, infantile scurvy, the experimental scurvy of guinea-pigs, ship beriberi, beriberi (two or more types), infantile beriberi, and epidemic dropsy and neuritis.

The accompanying diagram shows qualitatively the affinities of the different types of food deficiency cachexias; and following is a brief diagnosis of the types:

Rickets.—A disease of infants characterized by defective nutrition of the body and diminution of lime salts in growing bones, particularly the ends of the long bones and ribs at the junction of the ribs with cartilage ("rickety rosary" and "craniotabes"). Rapidly repeated pregnancies and suckling a child during preg-

3. *Jour. Med. Research*, xxxi, No. 2.

1. Watkins-Pitchford: *Transvaal Med. Jour.*, May, 1912.

nancy (according to Osler) seem to be important factors in the production of the disease. It is most common in children fed on condensed milk and food poor in fat and animal proteins (Cheadle).

Infantile Scurvy.—A cachexia of infants or children in which there is profound anemia, subperiosteal, subplural, and other hemorrhages; spontaneous separation of epiphyses from shafts of femur and tibia, and separation of ribs from cartilages, as in extreme cases of scorbutus. The gums, if the teeth have erupted, may be spongy. It is caused by proprietary foods, and there are instances, as in one of my necropsies, of its developing in breast-fed babies.²

Scurvy.—A disease occurring among laborers, or soldiers, in barracks and camps, or inmates of asylums, etc., and in times of famine; following the continued consumption of a one-sided or overcooked diet and one free from fresh vegetables. It is characterized by muscular joint subserous and subperiosteal hemorrhages; anemia, gingivitis, necrosis of bones, separation of costal cartilages from ribs in extreme cases, and [right-sided cardiac hypertrophy, dilatation and fatty degeneration, with degeneration of the vagus and its branches (personal observation)]. Certain epi-

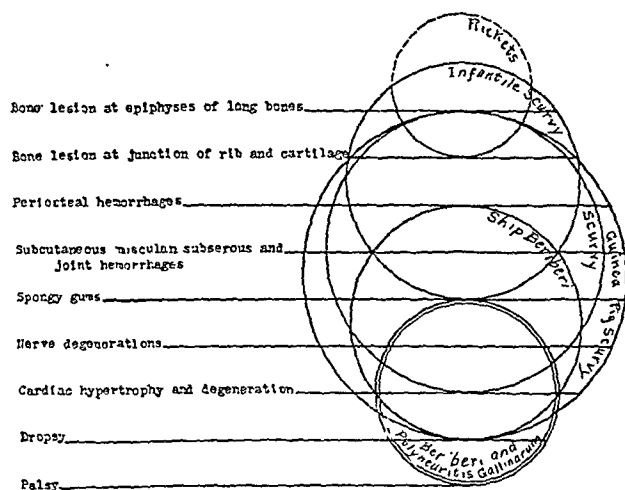


Chart showing affinities of the food deficiency syndromes.

demics display symptoms which disclose affinities with beriberi.

Experimental Scurvy of Guinea-Pigs.³—A disease, resembling Barlow's disease, produced in guinea-pigs by feeding a one-sided, or overcooked and unaccustomed diet of various sorts of grain, groats, and bread. There are hemorrhages, muscular, subperiosteal, and subcutaneous, often of the hind legs and ends of the ribs and between rib and cartilage, loose teeth and fragility of bone, and rarely polyneuritis and fatty degeneration of the heart. It is favorably influenced by "antiscorbutics."

Ship Beriberi.—A disease appearing usually on board sailing ships during long voyages, which may be due to eating preserved, dried, or tinned food in the absence of fresh vegetables. Symptoms are: weakness, shortness of breath and "other symptoms of weak heart causing often sudden death from acute paralysis of heart," edema of legs, and other parts of body. In a few cases sore gums, cutaneous and intramuscular hemorrhages, and peripheral neuritis are

seen. It often appears in spite of the use of lime juice. Recovery is rapid when fresh food is supplied.

Beriberi.—A disease due to eating exclusively polished rice or other food from which some unidentified principle or "vitamin" is absent. It occurs endemically in certain tropical or subtropical regions and is characterized chiefly by degenerative changes in the peripheral nerves with motor and sensory disturbances, dropsy, right-sided cardiac hypertrophy and dilatation with fatty degeneration. There are undoubtedly several types of this disease such as infantile and asylum beriberi, wet and dry⁴ beriberi, and that seen in Brazil (Lovelace)⁵ "endemic dropsy," and endemic peripheral neuritis, etc. Dechambre described an epidemic of scurvy as occurring during the Siege of Paris, in which a few cases displayed beriberi symptoms.

Polynuritis Gallinarum of Eijkman.—A disease produced in birds by feeding overcooked food and wheat flour, etc. Paralytic symptoms rapidly develop with subcutaneous edema, especially of the legs, and fatty degeneration of muscles of the heart; a disease resembling tropical beriberi rather than ship beriberi, neuritis being present more frequently than in ship beriberi.

Table 1 is meant to display the chief pathological features of the different diseases in this group in such manner that the affinities of the group may be seen at a glance.

Funk⁶ mentions five groups of symptoms observed in diseases caused by food theoretically deficient in "vitamins":

1. Nerve degeneration with paralysis and contractions.
2. Cardiac: dilatation of right heart, dyspnea, cyanosis, oliguria.
3. Anasarca, hydropericardium, hydrothorax, ascites.
4. Scorbutus with mouth lesions, skin, subperiosteal hemorrhages and bone lesions.
5. Pellagra syndrome, stomatitis, gastro-intestinal lesions, skin erythema and multiple nerve symptoms.

While Funk may be right about the etiology of Groups 1, 2, 3, and 4, it would seem to be unwise to include pellagra in this group, for among other reasons, while pellagra is a disease "occurring in maize-eating countries *par excellence*" the eating of overcooked, undercooked and overmilled, kiln-dried maize in large quantities takes place among negro laborers and natives in South Africa to an enormous extent, for it is frequently their sole article of diet. Yet pellagra is practically unknown among that class.⁷ They do, however, suffer from scurvy.

THE CARDIAC AND NERVE DEGENERATIONS IN BERIBERI

It can be shown that scurvy, a typical example of a food deficiency cachexia, possesses certain pathologic features identical with those of beriberi, about which the etiology in the minds of some is as yet undetermined, it will help to establish a place for beriberi among the dietetic cachexias.

It is well known that in beriberi the heart is usually enlarged; the enlargement is especially common on the right side, the right ventricle being usually hyper-

4. Vedder and Clark: Philippine Jour. Sc., Sec. B, 1912, vii, 423.

5. Lovelace: Peripheral Neuritis in the Amazon Valley, Am. Jour. Trop. Dis., 1913, i, 140; The Etiology of Beriberi, THE JOURNAL A. M. A., Dec. 14, 1912, p. 2134.

6. Funk: München. med. Wchnschr., 1913, No. 47.

7. Swift and Brown: Jour. Trop. Med. and Hyg., June 1, 1914, report six cases of pellagra in eight years at Bloemfontein Asylum.

2. It may be noted in passing that both infantile beriberi and infantile scurvy may develop in breast-fed babies.

3. Holst and Frölich: Ztschr. f. Hyg. u. Infektionskrankh., May, 1912.

trophied and dilated, this abnormal size of the right heart being often the only striking feature of the necropsy. There is some fatty myocardial degeneration. These changes are thought to be due to degenerative changes in the vagus and its cardiac branches.

Hypertrophy and dilatation of the right heart is recognized as being due to such mechanical processes as stenosis of the pulmonary artery, reduction of the vascular area of the pulmonary artery, as in emphysema and interstitial pneumonia, valvular lesions on right side, tumors and aneurysms pressing on the pulmonary artery, and adherent pericardium.

In addition to these, this lesion is constantly found in beriberi and the Rand type of scurvy.⁸ It is the type known as excentric hypertrophy or hypertrophy and dilatation characterized by thickening of the muscle and an increase in the size of the cavity. It seems to be due to a gradual strain on the right ventricle from loss of vagus innervation.

According to Scheube, Ellis found the average weight of the heart in beriberi in 125 post mortems to be about 13.37 English ounces, or 378 gm., while in 204 other cases it was but 9 ounces, or 254 gm. This increase is due chiefly to the hypertrophy of the right ventricle.

in the bulb, together with axonal reaction in the cells of the intrinsic cardiac neuroses, and in cells of the postganglionic accelerator fibers are conclusive evidence that almost the entire cardiac nervous system is affected by the beriberi virus in acute pernicious beriberi.

So extensive a poisoning of both inhibitory and accelerator systems accounts for a large measure of the cardiac symptoms in the latter class of cases. The loss to the heart of the control normally effected through the accelerator and inhibitory systems leaves the organ in practically the same state as the heart of a lower animal experimentally isolated from its guiding nerves.

The rapidity of beat seems to indicate that the inhibitory mechanism is first attacked. Partial exhaustion and dilatation of right heart soon follows. Arrhythmia occurs. The right heart fails to empty itself and the pulmonary and venous circulation becomes surcharged. Dilatation of right side increases.

CLINICAL OBSERVATIONS ON SCURVY OF THE RAND TYPE

My first impression of the cases of scurvy in South Africa was that the disease was of an infectious nature, but that rapidly gave way to a confirmed opinion that it was due to dietary errors.

The diet of the negro laborers was certainly one-sided, considering the amount and character of the

TABLE 1.—SHOWING AFFINITIES AND PATHOLOGIC FEATURES OF SCURVY, BERIBERI, ETC.

Bone lesions at epiphyses of long bones	Rickets	Infantile scurvy	*	Guinea-pig scurvy			
Bone lesion at junction of ribs and cartilage	Rickets	Infantile scurvy	Scurvy	Guinea-pig scurvy			
Subperiosteal hemorrhages		Infantile scurvy	Scurvy	Guinea-pig scurvy			
Joint, subserous, subcutaneous and muscle hemorrhages		Infantile scurvy	Scurvy	Guinea-pig scurvy	Ship beriberi		
Spongy gums		Infantile scurvy	Scurvy	Guinea-pig scurvy	Ship beriberi		
Nerve degeneration			Scurvy	Guinea-pig scurvy	Ship beriberi	Beriberi	Polyneuritis gallinarum
Cardiac hypertrophy and degeneration			Scurvy	Guinea-pig scurvy	Ship beriberi	Beriberi	Polyneuritis gallinarum
Dropsy				Guinea-pig scurvy	Ship beriberi	Beriberi	Polyneuritis gallinarum
Palsy						Beriberi	Polyneuritis gallinarum

* May occur during adolescence but probably is not encountered in adults.

Jojob⁹ records ten necropsies in the cardiorespiratory form of disease (beriberi) at Camp Saint Jacques. Symptoms: dyspnea, intense cardiac erethism, extreme anxiety, and sudden death by syncope. Jojob notes the occurrence of hydropericardium, 180 c.c., and cardiac hypertrophy, 310 to 490 gm.

Pekelharing and Winkler,¹⁰ state that "hypertrophy of the right heart is always present and associated with dilatation, sometimes small, sometimes great, and not infrequently enormous." The muscular coat of the heart is often pale. Of 64 necropsies,

5 hearts weighed 250 to 300 gm.
42 hearts weighed 300 to 350 gm.
10 hearts weighed 350 to 400 gm.
7 hearts weighed 400 to 450 gm.

according to Hamilton Wright.¹¹

Observed atrophy in the terminations of the vagal inhibitory fibers in the heart muscle, axonal reaction in the cells of the ambiguous and vagal portion of the combined nuclei

labor required of them. It consisted, as General Gorgas¹² has pointed out, too largely of carbohydrates. Five to eight feet of rock is no mean task to drill through in a day on a diet composed chiefly of corn-meal. Looking over the dietary, it was seen that the disease apparently had some relation to the following factors: Overmilled corn as the chief article of diet; overcooked corn as well as overboiled food of whatever kind; roasted meat, the natives customary way of cooking, was never supplied; and insufficient and overboiled vegetables.

Cases, too, very definitely came on during a drought and in locations where it was impossible to supply fresh vegetables and fresh meat. Several types would appear. Dr. Peall, of Arcturus, Southern Rhodesia, reported the appearance of neuritis and ataxy with enlarged right heart and edema of tibiae. Thus confirming the observations of Balfour of Khartoum and other African observers in this particular.

An interesting feature of the disease was brought out by ascertaining the incidence and death-rate among different types of natives, for during the year 1913, at one of the mines, the incidence per 1,000 per year was 12.37 among Cape Colony "boys," while it was

8. Buzzard, in Reynolds System of Medicine, 1870, Vol. I, notes cases of scurvy with fatal syncope and attributes it to the muscular structure of heart being weakened by malnutrition. Thus, cardiac syncope is also a feature common to beriberi and scurvy.

9. Jojob: Ann. d'hyg. et de méd. coloniales, 1911, No. 1, p. 88.

10. Pekelharing and Winkler: Beriberi, 1887.

11. Wright: Studies Inst. Med. Research, Federated Malay States, 1903, ii. No. 2.

12. Gorgas, Sanitation on the Rand, THE JOURNAL A. M. A., June 13, 1914, p. 1855.

7.45 among "tropicals," yet the death-rate was only 0.19 per 1,000 per annum among the former, while it was 2.66 among the tropicals, or 14 times as great. The tropical negro therefore gets scurvy in far more serious form. This may be explained from the observation that the scorbutic "tropical boy" had not yet begun to vary the monotony of his diet by purchase of food at Kaffir stores outside the mine compound.

The clinical cases of scurvy seen varied in severity from those that had only spongy gums and very slight infiltration of calves, to others with severe and extensive hemorrhages of the muscles, joints, and serous membranes, or bone and cartilage lesions. The appearance of the patient was apathetic; many of them had been in bed six to nine weeks. Motion and locomotion were impaired, the recovering cases walked with a slight straddle, but there was no foot drop. The sick ones were either unable to stand or perhaps stood well with one leg, while the other was partly flexed, i. e., the heel elevated, the toes and ball of foot resting on the ground, apparently due to infiltration and atrophy of leg muscles. Their gums were swollen and pouting at the margins, which were bright red and fungating. On pressure, the blood spurted on the adjoining teeth. The muscles of both legs were uniformly, or unequally infiltrated and the overlying skin was smooth and shiny. After the infiltration had subsided, there was atrophy of the calves with wrinkled shiny skin. The knee-jerks in those examined were generally slightly exaggerated in all save one case. In this, the right was normal, the left practically absent. Several cases, on auscultation, disclosed tachycardia as in beriberi.

At Bulawayo, through the kindness of Dr. Eaton, a case was seen in which the gums at the time of examination were negative, the legs and tibiae were also negative, yet the sternum had collapsed, due to separation of the costal cartilages from the ends of the ribs. One could feel the cup-shaped depression in the ends of the ribs. There was also a big hematoma over the left scapula and shoulder.

Doctors at Bulawayo describe a condition known as "big leg," a condition of edema following active exertion, such as marching to the mine, occurring in some cases after three weeks in the detention camp. This is of interest, because undue exercise seems to have been an exciting or accelerating factor in precipitating attacks of beriberi and scurvy, as in soldiers after a march.

Not only has the Rand type of scurvy affiliations with beriberi, in that cardiac degeneration and degeneration of the vagus occur in typical scurvy as well as in beriberi, and by reason of the appearance of beriberi or neuritic features in certain epidemics of scurvy, but Dr. G. P. Turner of Johannesburg has observed that many of the negro miners dying of various diseases, at necropsy disclose slightly edematous calves without any other sign of scurvy or beriberi. Scurvy has definite affiliations with rickets, and infantile scurvy too, for in the case seen at Bulawayo there had been extensive destruction of the chondrocostal junction, with depression of the entire sternum.

Couvy¹³ gives an interesting account of an outbreak of beriberi and of scurvy in a garrison of soldiers at Akjoucht (Mauritania, May-September, 1908). There were 150 natives and eleven Europeans. Beriberi appeared first among the natives; later cases of scurvy appeared among them. The officers, how-

ever, during the same period, had only scurvy, with no symptoms of beriberi.

TABLE 2.—DIET AT OUTBREAK OF DISEASE

Diet of Native Soldiers		Diet of Europeans	
	Kilos		Kilos
Rice	0.500	Flour	0.450
Fresh meat	0.500	Fresh meat	0.500
Salt	0.015	Fat	0.020
Sugar		Coffee	0.025
		Sugar	0.030
		Salt	0.010
		Wine, dried beans and preserves	

Among those suffering from beriberi, as well as scurvy, the suppression of rice from their diet and its replacement by other articles was followed by the disappearance of cardiac troubles, asphyxia, pulmonary edema, and subcutaneous edema, but had no effect on the classical lesions of scurvy—spongy gums, muscular pain, and induration of limbs.

This instructive observation of Couvy illustrates the personal racial or idiosyncratic factor of this group of diseases, for, as far as can be ascertained, following the use of meat with one other article of food (polished rice), and associated with excessive consumption of salt¹⁴ (saline spring water), two distinct syndromes appeared among the men who were getting the same ration (native soldiers).

This constitutional, or idiosyncratic, factor in the production of these diseases does not seem to have been sufficiently emphasized and certainly has not yet been explained. For example, a certain exclusive diet will cause scurvy in guinea-pigs, yet the same diet causes polyneuritis in pigeons. On the other hand, a deficient dietary in a tropical African negro mine laborer causes severe scurvy, in a Cape Colony African negro mine laborer, mild scurvy, and in some African negroes a diet that causes scurvy in one set of men causes neuritis in others. Furthermore, an exclusive diet of rice, which usually causes beriberi in man, has caused scurvy in certain instances, for Hölst and Frölich¹⁵ call attention to the fact that "rice which is so often supposed to be the cause of tropical beriberi occasionally has provoked scurvy." Delpech¹⁶ mentions in his article on scurvy in Paris, 1870-71, "a patient who got the disease who for four months had eaten meat only four times; besides this he had nothing but rice." Other scurvy patients, described by Bucquoy¹⁷ had eaten rice or bread almost exclusively.

NOTES ON THE PATHOLOGY OF SCURVY

Three severe cases of scurvy, practically free from complication (one had a little tuberculosis), came to necropsy at one of the hospitals. The anatomic findings were closely similar and may be summarized in a composite anatomic diagnosis:

Hemorrhagic extravasation into muscles of both legs, left forearm and left psoas muscles, involving the muscle fascia between muscles, old and recent.

Subperiosteal hemorrhage, shaft of left femur.

Hemorrhage into left knee joint.

Old subcapsular hemorrhage (knee joint).

Ulcerative gingivitis with hemorrhages.

Separation of mandibular periosteum.

Anemia of all viscera.

Hypertrophy and dilatation of right heart.

Fatty degeneration of musculature of right heart.

Hyperplasia of femur marrow.

Edema of lungs.

Scaly desquamation of both legs.

14. It would be interesting to know whether the disease was induced by adding excessive amounts of salt to the vitamin-free diet of animals.

15. Hölst and Frölich: Jour. Hyg., 1907, vii, 667.

16. Delpech: Ann. d'hyg., 1871, xxxv, 295.

17. Bucquoy: Union méd., September-October, 1871.

13. Couvy: Ann. d'hyg. et de méd. coloniales, 1911, No. 1, p. 97.

This is purely a picture of scurvy, without a single beriberic feature save, of course, the cardiac change. The picture presented by the heart in these cases is very striking. It is seen to be enlarged and very pale, but as it is lifted from its bed, the pallor of a yellowish tint is sharply limited to the broad right ventricular wall. The left ventricular wall externally is of good color. This is striking, but becomes accentuated when the heart is sectioned, for the left ventricle is seen to be of normal thickness and capacity, contracted, not dilated, and the muscle of good deep color; while the right ventricular wall is definitely thickened 8 to 10 mm. more or less in thickness, and of a yellowish pallor. The chamber is dilated and the muscle stands stiffly out from the septal wall and does not collapse on it as in a normal heart. This lesion appears to be pathognomic of the Rand type of scurvy and it brings this type of the disease into relation with beriberi and other dietetic cachexias.

An examination of the cardiac muscle and of the vagus nerve and its branches (Marchi preparations) shows that there had been extensive diffuse fatty degeneration of the musculature of the right ventricle, the muscle cells being stippled over with small fat droplets. There are also small areas in which the droplets are larger. The intermuscular stroma contain many extracellular small droplets of fat. The cardiac nerves do not appear to be degenerated. The sections of the vagus at different levels all show considerable degeneration of the fibers. This is different from the finding of Pekelharing and Winkler in beriberi, who state that the nearer one approaches the periphery of the nerves, the greater the nervous degeneration; the nearer one gets to the center, the less distinct it is, and in the great nervous trunks and in the roots no changes are found in beriberi.

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hypertrophy was absent. It is likely that cardiac hypertrophy may not occur in scorbutic persons debilitated by starvation and associated chronic disease. Again the type of scurvy seen among tropical negroes on the Rand and in Rhodesia appears to be different from that observed among troops, in jails, asylums, and in time of poverty and famine in that the former does not yield so readily to treatment as the latter is said to do.

CONCLUSIONS

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KARL SCHÄFFLE, M.D.
PHILADELPHIA

As a result of personal dissatisfaction with the prognosis of tuberculosis, my attention was drawn to an abstract of an article by Moritz Weiss,¹ in which the prognostic value of Ehrlich's diazo reaction in the urine of tuberculous subjects is emphasized. He also describes a test of greater reliability and simplicity which was evolved from study of the diazo reaction. In the original article Weiss refers to his earlier writings on the subject, which date back to 1906. During seven years' observation he has confirmed the ideas of Koch and others by observing that death invariably followed the persistent presence of the diazo reaction in the urine of the tuberculous. In addition to his own work, Weiss refers to that of Dr. Heflebower, who reported similar results at the United States Government Sanatorium at Fort Bayard, N. M. Dr. Heflebower's article² reviews the general literature and mentions Gwerder's use of potassium hypermanganate with the diazo reagent. Heflebower, using the technic of Weiss, carefully compares his test with the diazo and demonstrates the superiority of the former.

Early in his observations, Weiss was puzzled by the occasional absence of the diazo reaction in obviously advanced cases and its frequent disappearance just before death. This led him to suspect that the unknown substance on which the diazo reaction depends was derived from an antecedent which does not give a positive reaction. On adding a 1:1,000 solution of potassium permanganate drop by drop to positive specimens and the reagent combined, he noted that the characteristic red of the reaction became brown; also, when the permanganate solution was added to positive specimens alone, a canary yellow

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2. Heflebower: *Am. Jour. Med. Sc.*, 1912, p. 221.

was produced. In addition, the last reaction occurred in specimens which had become negative to the diazo but never appeared in normal urine. He identified the yellow body as urochrome and felt that he had oxidized its antecedent or chromogen, so he called this urochromogen and concluded that it was the principal substance causing the diazo reaction and that its precursor was the body which did not react to it. Thus, the urochromogen test should be positive when the diazo is positive, and by being positive when the diazo is negative, should show the presence of the antecedent of the substance on which both tests depend. Weiss attributes the presence of urochromogen to disintegration of tissue with excretion of incompletely oxidized material in toxic patients of low vitality.

In January, 1914, I began to use the diazo and urochromogen tests at Pennsylvania State Tuberculosis Dispensary No. 21. The results are shown in the accompanying table. It occurred to me that the low percentage of positive reactions was due to the fact that all of the subjects were ambulant cases. In February, through the courtesy of Dr. Rosenberger, I was enabled to extend my observations to the laboratory of the Philadelphia General Hospital. Here I had the opportunity of studying specimens from a

In addition to specimens from the tuberculous, I tested urine from patients with some of the other diseases in which the diazo has been found, as well as a large number of normal specimens. The results in the former were insufficient, and in the latter always negative.

Although these figures are meager and not conclusive, I hope that they may be sufficiently suggestive to arouse interest. The tests were performed in most cases only on admission, and all the deaths recorded have occurred within four months. The majority of the cases giving a positive reaction were afebrile. A later report will deal more particularly with the length of time between the first appearance of positive reactions and death and will note the incidence of fever.

The object of this preliminary report is to induce others to adopt this simple test as part of routine laboratory procedure for at least sufficient time to demonstrate its worth.

4719 Baltimore Avenue.

New and Nonofficial Remedies

COMPARISON OF DIAZO AND UROCHROMOGEN TESTS.

STATE DISPENSARY CASES			
	No.	Dead	Per Cent.
Positive to both tests	15	1	..
Negative to both tests	75	1	..
PHILADELPHIA HOSPITAL CASES			
Tuberculosis:			
Positive to both tests	38	16	42
Negative to both tests	137	21	15
Positive U. but neg. D.	13	7	58
Positive D. but neg. U.	2	1	..
Pneumonia:			
Positive to both tests	2	1	..
Negative to both tests	14	4	..
Positive U. but neg. D.	1	..	..
Erysipelas:			
Positive to both tests	8	1	..
Negative to both tests	38	1	..
Positive U. but neg. D.	2	..	..
Pertussis:			
Positive to both tests	2	..	..
Negative to both tests	14	..	..
Measles:			
Positive to both tests	2	..	..
Negative to both tests	11	..	..

large number of advanced cases. The positive reactions are seen to be much more numerous. The significant features are the difference in mortality percentage between the positive and negative cases and particularly the high death-rate among those with a negative diazo and positive urochromogen.

An interesting incident occurred in the removal of a patient from the dispensary list to the hospital because of progressive illness. While coming to the dispensary his urine was positive to both tests, which was also the case on admission to the infirmary; a few days later, however, it became negative to the diazo but remained positive to the urochromogen test; death occurred two weeks later.

The technic of Weiss requires a small amount of fresh, limpid urine diluted with water to three times its volume, divided into two test-tubes, to one of which 3 drops of a 1:1,000 solution of potassium permanganate is added, the other tube being used as a control. Many of my specimens were turbid and of different shades of amber or red, but the turbidity and original color appeared to have little effect on the reaction. I recognized as a positive reaction only a distinct canary yellow which remained fairly permanent, although there were frequent slightly yellow reactions which soon disappeared.

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. THEIR ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT AND IN PART ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS ARE ASKED FOR TO AID IN THE REVISION OF THE MATTER BEFORE PUBLICATION IN THE BOOK "NEW AND NONOFFICIAL REMEDIES."

THE COUNCIL DESIRES PHYSICIANS TO UNDERSTAND THAT THE ACCEPTANCE OF AN ARTICLE DOES NOT NECESSARILY MEAN A RECOMMENDATION, BUT THAT, SO FAR AS KNOWN, IT COMPLIES WITH THE RULES ADOPTED BY THE COUNCIL.

W. A. PUCKNER, SECRETARY.

MENINGOCOCCUS VACCINE.—(See N. N. R., 1914, p. 252).

E. R. Squibb and Sons, New York.

Meningococcus Vaccine, Immunizing.—Marketed in boxes of 3 syringes containing 100, 500 and 1,000 million killed meningococci.

Meningococcus Vaccine, Curative.—Marketed in boxes of 4 syringes containing 100, 200, 400 and 500 million killed meningococci. Also in boxes of 2 syringes containing 100 and 500 million killed meningococci; boxes of 6 ampoules containing 100, 100, 500, 500, 1,000 and 1,000 million killed meningococci, with a syringe, and boxes of 2 ampoules containing 100 and 500 million killed meningococci, with a syringe.

PNEUMOCOCCUS VACCINE.—(See N. N. R., 1914, p. 253).

E. R. Squibb and Sons, New York.

Pneumococcus Vaccine.—Marketed in boxes of 4 syringes containing respectively 100, 200, 400 and 500 million killed pneumococci; boxes of 2 syringes containing respectively 100 and 500 million killed pneumococci; boxes of 6 ampoules containing 100, 100, 500, 500, 1,000 and 1,000 million killed pneumococci, with a syringe, and boxes of 2 ampoules containing 100 and 500 million killed pneumococci, with a syringe.

STAPHYLOCOCCUS VACCINES.—(See N. N. R., 1914, p. 254).

E. R. Squibb and Sons, New York.

Staphylo-Acne Vaccine.—Marketed in boxes of 4 syringes containing 100 million killed staphylococci and 25 million killed acne bacilli, 200 million killed staphylococci and 50 million killed acne bacilli, 400 million killed staphylococci and 100 million killed acne bacilli, and 500 million killed staphylococci and 200 million killed acne bacilli; boxes of 2 syringes containing 100 million killed staphylococci and 50 million killed acne bacilli and 500 million killed staphylococci and 200 million killed acne bacilli; boxes of 2 ampoules containing 100 million killed staphylococci and 50 million killed acne bacilli and 500 million killed staphylococci and 200 million killed acne bacilli, with a syringe.

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is almost invariably diminished, except perhaps in a real migraine attack, and it may show albumin and even casts. The duration of these attacks varies from a day to a week, depending on the character of the exciting cause.

The immediate treatment is the administration of cathartics, alkalies and large amounts of water; high enemas, at first for colon washing and later to introduce physiologic saline and alkalies (such as sodium bicarbonate, sodium citrate and potassium citrate) for absorption into the blood. Stomach washing is often of benefit.

As soon as vomiting ceases, oatmeal gruel or other thin cereal and milk-sugar or glucose should be given. The fruit juices, such as orange and lemon, are of value. Rest, a bland diet, and daily free movements of the bowels and plenty of water taken soon cause a complete return to health.

The preventive treatment is to seek the etiologic factor and eradicate it if possible; if not possible, then to prevent the subjective exciting cause, such as a misuse of the eyes, ill-advised food, too much fat in the food, alcohol, coffee, tea, tobacco, etc. Bad teeth and bad throats must be treated.

BATHING

As a hygienic measure, bathing goes back to most ancient times. Warm and cold water baths, and even medicated baths are mentioned in early Grecian periods. In the middle dark ages, after the Roman period, bathing as a hygienic and therapeutic necessity seems to have been forgotten. Interest in public baths and medicinal bathing and the hygienic popularity of frequent bathing has only within the last thirty or forty years been slowly reviving.

Frequent bathing is essential to remove dirt, sweat and skin excretions. Irritating decomposition and offensive odors are caused by the neglect of bathing, to say nothing of such neglect causing many skin diseases. Proper bathing increases normal excretions from the skin and promotes the health of the skin. Hot water bathing relieves the congestion of internal organs, improves the general circulation, and cold water bathing tones up the vasomotor system. A normally bathed skin is a better regulator of the internal temperature, a better excretor, and has more normal sensations (heat, cold, esthesia). Soap, hot water and friction are essential to remove dirt and sweat. A simple plunge or shower bath, if taken daily, and followed by rough-towel friction, may keep the skin clean and healthful, but even then a hot soap bath is more or less frequently essential.

The daily cold plunge does not necessarily place a man "next to the Gods," as he so frequently thinks it does. Such cold plungers are often very proud of their accomplishment and sneer at those who do not take this daily treatment, and the plunger is likely to "thank God that he is not like other men." Very many times daily cold plunges or cold showers are harmful, especially to those who are underweight or are losing too much weight. A daily or nearly daily bath of some kind, however, is essential for almost every one in order to promote the best of health and to prevent some diseases.

It is not our purpose to describe, or even to discuss the various kinds of baths, or hydrotherapy. Medicated baths, various sweating baths or so-called baths (electric light or body baking), mud baths, etc., have

all their valuable uses, but are not necessary for the promotion of health in the well, that is, are not hygienic measures. The cold bath may be from 80 to 70 F. or below. The tepid bath may be considered anything from 80 to 100 F.; anything much over 100 F. is a hot bath.

Whenever possible, every family should have a set bath tub. Every city should have public as well as private bath houses and swimming pools, except where the climate is warm the year around and good water for bathing (fresh or salt) is near at hand. Every child should be taught to swim.

The family physician should be consulted as to the kind of bathing each individual should take, and many serious errors would not occur. It is not advisable to bathe directly after a meal. Good fresh air is as essential for bathrooms as for any other part of the house. One respire more while bathing (hot or cold), and hence the air should be pure. Friction is a valuable adjunct to bathing.

The medical value of salt water bathing has been overestimated; it is a pleasure, and it is more exercise, especially in surf bathing and swimming, and thus it is valuable for the well and strong. The cold air at the seashore after the person leaves the water is tonic, but may cause chilling in the weak.

MEAT INSPECTION

This is to urge the necessity for the state employment of skilled meat inspectors for animal food slaughtered for local use. The government inspects only for interstate and export commerce. Besides tuberculous beef, the danger of the human being acquiring tapeworms from cysticercus-infected beef and pork, and the danger from trichinae should be emphasized. It should be known that sheep may also be infected by the cysticercus (from dog infection) though this is not transmitted to man. Swine, at least, are often infected with lung fluke disease. Esthetically, however, it is not pleasant. The danger lurking in ancient cold-storage fowls and turkeys and stale shellfish, and shellfish gathered or fattened in sewerage-polluted water, only emphasizes the need of local food inspectors, backed by bacteriologists employed by local boards of health.

IMMUNITY TO DISEASE CAUSED BY PROPER FOOD

Too much fat in food causes the formation of too many soaps and a loss of calcium from the body through the stools. This leads to acid intoxication, and frequently occurs in infants. While carbohydrates tend to prevent acidosis, too much carbohydrate in children is said to cause a surplus of water in the tissues, and this creates a tendency to acquire disease. Whether or not this suggestion is true, certain it is that a properly mixed diet gives children and adults much better power, apparently, to ward off and fight disease. A milk diet, for instance, too long continued is bad for both child and adult. Young children should receive milk, starch and maltose or lactose, and later more protein, and they are less likely to acquire infection. It is quite probable that the building up of more antibodies by richer protein food may be the reason that in adults the infection of tuberculosis is generally at first local, while in young children the infection is likely to be immediately general.

A well, healthy infant rarely has thrush, while by the sickly infant it is readily acquired.

(To be continued)

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SATURDAY, OCTOBER 10, 1914

THE WRAPPING OF BAKER'S BREAD

It has been said that the making of a perfect loaf of bread is the goal of all those who aspire to excel in cookery. Certainly bread, which forms a part of every well planned meal, is a food of which the palate never tires. Let the loaf be ever so satisfactory, however, with respect to size and symmetry, crust and crumb, when it leaves the baker's oven, it may nevertheless experience subsequent changes which sooner or later render it less attractive, palatable, or wholesome. Stale bread does not appeal to the taste in the same way that fresh specimens of the "staff of life" do; but in addition to the development of staleness bread may also develop so-called bread diseases caused by micro-organisms, rendering the product unfit for human consumption. Furthermore, like many other unprotected and carelessly handled articles of food, exposed bread may become a purely mechanical carrier of objectionable organisms.

The recent agitation in behalf of improved conditions in the food industries has involved not only the adulteration of the products entering into the ration of man and the domestic animals, but likewise the cleanliness of the articles of diet intended for human consumption. The plea for clean milk is becoming more prominent than the propaganda for pure milk. Sanitary food legislation is beginning to aim at food that is clean from the point of view of the hygienist.

The demand for clean bread has promptly followed the cry for clean milk and unpolluted water. Already in many communities regulations are in force which compel the protection of bread and bakery products between the oven and the home. Bread wrapped with either porous or paraffined paper is now a common sight even in small villages of the United States. From the sanitary point of view it is of no small value that an article of diet so extensively employed as bread is, should be practically sterile both in the interior and on the surface of the loaf as it leaves the oven. Bacteriologic studies reported at various times leave no doubt that unprotected bread subsequently acquires a microbial flora frequently extensive in variety and number. It has been stated, for example,

that the colon bacillus was present on the surface of 17 per cent. of unwrapped samples examined in one investigation and that in addition to this number 12.5 per cent. showed the presence of such large numbers of bacteria as to be classed as of doubtful quality.¹ On the other hand, samples of wrapped bread showed relatively low bacterial counts and the absence of pathogenic organisms.

The wrapping of bread involves something more than the mere exclusion of living organisms and inert dirt. It necessarily interferes with the passage of moisture from the loaf. The change in the distribution of moisture in a loaf of bread is attended by the development of a different odor and flavor which is familiar under the name of staleness. Few persons are as readily satisfied with stale bread as with that which possesses the qualities referred to by the designation of fresh. Some bakers have expressed themselves as opposed to the wrapping of bread, in the firm belief that when it is kept in a close, warm, moist atmosphere from the time of baking it is far more likely to develop sourness and mold than if stored where it may cool rapidly and lose any excess of moisture.

It is not easy at present to describe the change which results in staleness. The suggestion has been offered that the starch particles composing the crumb are colloids which hold considerable quantities of water in combination. Fresh baked bread contains much more water in the interior than in the crust of the loaf. The interior crumb is in a colloidal condition with a rather high moisture content; but, as the bread grows old, the ratio of the water content between crust and crumb is changed, the water of the latter leaving it to be absorbed by the relatively drier crust. The arresting of the passage of moisture through the crumb and the concentration thereof in the crust is injurious to the latter, and may likewise detrimentally affect the interior of the loaf. Other factors such as a development of increasing acidity with age may unquestionably enter into the problem of staleness.

Although the use of the bread wrapper has met with public approval in many quarters, it is evident that the claims of injury to the quality and palatability of the loaf demand consideration along with the possible sanitary advantages. A chemical investigation of the subject has been completed in the department of food and drugs of the Indiana State Board of Health by Barnard and Bishop.² The data confirm the observations on the physical appearance of wrapped and unwrapped loaves. The wrapping of the bread, either in semiporous waxed or paraffin paper retards the escape of moisture and tends rather to the preserva-

1. Sadtler: Rep. Sixteenth Convention Nat. Assn. of Master Bakers, 1913.

2. Barnard, H. E., and Bishop, H. E.: The Effect of Bread Wrapping on the Chemical Composition of the Loaf, Jour. Industrial and Engineering Chem., 1914, vi, 736.

tion of that "colloidal condition and physicochemical equilibrium," the destruction of which results in staleness. The belief that the moisture of the crumb is imparted to the crust, which thereby loses its crispness and becomes soft, is not borne out by the work of the Indiana chemists. Whereas unwrapped bread loses its freshness after the first day, the early keeping quality both as to condition of crumb, flavor and odor is enhanced by the use of wrappers. There is, accordingly, no occasion at present for discarding what has seemed to many to be a wholesome innovation in the distribution of bakery products.

THE INCREASED FAT-LIPOID CONTENT OF THE BLOOD IN PREGNANCY

By means of the precipitin test it is now a comparatively easy matter to determine the species from which a sample of blood is derived. Spots and stains of human blood can be differentiated readily from those made by the blood of all kinds of animals, and it is possible to differentiate the blood of closely related species. As yet it is not possible to identify the individual from examination of his blood, but even that may become feasible, because the more blood is studied by newly devised methods, for example, isoagglutination, tests for digestive ferments and antibodies of diverse action, as well as by established chemical and microscopic methods, the more definite becomes the fact that the blood of each individual is more or less peculiar. We know now that human beings are permanently separable into three or four main groups depending on the agglutination of their red corpuscles by human serum. The blood of pregnant women appears to have in it a digestive ferment directed specifically against the placental tissues (Abderhalden's test), and the blood of a person who recently has had typhoid fever is different from that of a person who has not had typhoid fever and has not been inoculated with typhoid bacilli. Many other examples of like import might be cited, but what has been said is enough to make it clear that in time we may learn to estimate the peculiarities of the blood of an individual so accurately and completely as to determine thereby his identity. In connection with this general question it is interesting to note that recently it has been found that the difference in the fat and lipid content of the blood of the mother and the new-born child is so great that under certain circumstances it may serve to differentiate the maternal blood from that of the new-born. Hermann and Neumann,¹ to whom we owe this demonstration, found that in normal women the fats and lipoids equal 5.9 gm. in a kilo of blood, in women in the later stages of pregnancy 7.8 gm., and in the new-born 4.365 gm.

1. Hermann and Neumann: Ueber Lipidgehalt des Blutes normaler und schwangerer Frauen sowie neugeborener Kinder, *Biochem. Ztschr.*, 1911, xliii, 47.

In pregnancy the amount begins to increase in the third month, and after birth the normal condition is reached in about the second week in women who nurse, somewhat later in those who do not. As there occurs a distinct lipemia and lipoidemia in old women and after removal of the ovaries, it would appear that the condition is dependent, in some way, on suspension or change of activity of the ovaries, and that in pregnancy there is a suspension or change in the actions of the ovarian apparatus. As the tests necessary to distinguish the blood of the child from that of the mother on the basis of the difference in fat and lipid content are very simple,² it is believed that under favorable circumstances they will prove of practical value when the question arises whether certain blood spots are of maternal or fetal origin (Vollhardt).

The chief interest of the demonstration of the high fat-lipoid content of the blood in pregnancy, lies, however, in the light it throws on the functions of the ovaries. At the same time it forms a new illustration of the changing peculiarities to which the blood is subject.

INTESTINAL OBSTRUCTION

During the past two or three years or longer, the cause of death following intestinal obstruction has been the subject of active investigation in a way that bears witness to the excellent spirit in which medical research is at present being pursued in the United States. The fatal outcome of interference with the normal passage of intestinal contents is usually too rapid to be attributable to starvation. Various theories, proposed to account for the characteristic symptoms, have been championed by different workers with the result that the interchange of criticism and the analysis of the results already achieved have become a stimulus to new experimentation. Thus the work of Draper, Murphy, Hartwell, Whipple and their collaborators—to single out a few names—has already greatly increased our knowledge of the problems of intestinal obstruction and brought them much nearer to solution than they were prior to the activity of these American investigators. In referring more specifically to one of the most recent contributions by Hartwell, Hogue and Beekman¹ we have no intention of implying that it represents the final word; but it does lend emphasis to certain facts and shift the burden of proof in a new direction.

The theory of a bacterial infection of the organism by the passage outward of bacteria from the intestinal lumen has had much to support it. The newer experi-

2. Compare Hermann and Neumann, Reference 1. Vollhardt: Die Bedeutung neuerer Methoden zur Unterscheidung mütterlichen und fötalen Blutes für die gerichtliche Medizin, *Vrtljschr. f. gerichtl. Med.*, 1914, xlviii, 1.

1. Hartwell, J. A., Hogue, J. P., and Beekman, F.: An Experimental Study of Intestinal Obstruction, *Arch. Int. Med.*, 1914, xiii, 701. In this paper the literature of the subject will be found referred to in considerable detail. The Consequences of Intestinal Obstruction, editorial, *The Journal A. M. A.*, Nov. 29, 1913, p. 1988.

mental evidence clearly shows, however, that despite the activity of micro-organisms within the bowel, they are not a necessary factor in determining either the symptoms or the fatal outcome of intestinal obstruction. The assignment of the responsible rôle to bacteriemia is no longer tenable, and this feature is excluded as the essential cause of death. Likewise the view that a disorder of the nervous system controlling the cardiac and vasomotor systems is the primary fault has nothing more than indefinite analogies to support it.

The point most vigorously debated concerns the possibility of an intoxication from poisonous substances engendered and imprisoned in the obstructed portions of the intestine. Certain it is that the intestinal contents may exhibit an intense toxicity. Whether this remains unchanged when the material has been rendered sterile is perhaps not equally positive. Living bacteria may, of course, kill if they gain entrance into the peritoneal cavity. On the other hand, we are reminded that the mere presence in an obstructed intestinal tract of substances which act as poisons when introduced directly into the circulation is no indication that these substances cause the death resulting from an obstruction, since such substances may be found in the intestine in conditions of continued health. Hartwell, Hoguet and Beekman insist that to accept the view that death results from toxemia it must be conceived either that new poisons are elaborated and absorbed or that an abnormal absorption of normally present products takes place. Whipple, Stone and Bernheim,² though unable to isolate any poisonous material from the normal intestine, have obtained toxic products from closed or obstructed loops of bowel. They believe that the harmful substance with which they were dealing is elaborated in the mucosa and that some as yet unknown agency is at work which profoundly alters the intestinal epithelium under conditions of obstruction. Hartwell and his colleagues, on the other hand, cannot justify these claims. They believe that the alleged toxic substances are derived from damage to the intestinal wall. Quoting them, the essential factor in causing the symptoms and death in intestinal obstruction does not lie in the poisons *per se*, but in the production of lesions which favor their abnormal absorption. Lacking these lesions individuals die only from lack of water or from starvation, if dehydration is prevented.

The damage localized in the bowel is believed to result largely from the trauma inflicted by the overdistention with contents acting to impede the circulation. The chemical action of digestive enzymes stagnating above the obstruction may also be of moment. Such a damage having resulted, Hartwell and his colleagues picture a bacterial invasion into the bowel wall with a death of tissue cells which is invariably demon-

strable by histologic examination. In this localized deterioration the poisonous substances appear to be elaborated. The loss of water characteristic of intestinal obstruction is caused by the excessive drainage into the intestinal lumen followed by vomiting. It is the merit of Hartwell and Hoguet³ to have clearly shown that this unexpectedly significant factor is entirely under therapeutic control and can be rendered harmless by subcutaneous administration of physiologic saline solution, for example, by continuous hypodermoclysis.

The evidence with reference to the poison or poisons involved in the fatal conditions is still indirect and inferential. The salutary effect of the replacement of lost water is manifested only so long as the intestinal mucosa remains intact. Obstruction of the lower bowel is less productive of dehydration because there is a long intact intestinal surface through which reabsorption can take place, the vomitus being thereby reduced in amount. This may explain why high intestinal obstruction in man is so much more acute than low obstruction. In the latter, mechanical conditions render the damage factors prominent. The clinical applications of the newer experimental studies need to be worked out in their details, but there can be no doubt that they will furnish a valuable contribution to practical medicine.

THE HISTORICAL PERSPECTIVE IN MEDICINE

We seldom realize the importance of a historical perspective in medicine and surgery. Many a discovery proclaimed as "new" proves, in the light of historical knowledge, to be nothing more than a statement of some previously announced discovery subsequently demonstrated to be of little or no service. Last year Karl Sudhoff⁴ of Leipsic, in his paper "On the Origin of Syphilis," besides relegating again into the background the recently revived idea of the American origin of syphilis, called particular attention to the treatment of syphilis by mercury which had developed before the discovery of America. He reminds us that several times in medical history arsenic has been recommended as a triumphant substitute for mercury. It has always, however, failed to justify the claims of its adherents; and experience with salvarsan has seemed to emphasize this tradition.

Sudhoff confesses that he cannot settle the question of the absolute origin of syphilis, though he thinks that he has been able to show the scientific recognition of syphilis and its therapeutics. Syphilis differs in this from all the other "new" diseases that have been reported. We find in the history of European medi-

3. Hartwell, J. A., and Hoguet, J. P.: Experimental Intestinal Obstruction in Dogs, with Especial Reference to the Cause of Death and the Treatment by Large Amounts of Normal Saline, THE JOURNAL A. M. A., 1912, lix, 82.

4. Sudhoff, Karl: Der Ursprung der Syphilis, Seventeenth Internat. Cong. of Med., Section, History of Medicine, London.

2. Whipple, Stone and Bernheim: Jour. Exper. Med., 1913, xvii, 286.

cine at the same period, both the recognition of the disease and the development of a genuine therapy for it. As Professor Sudhoff says, the discovery and detailed study of this method of treatment is a most interesting chapter of medical history. He remarks that it is "the method of treatment which even to-day—in spite of the often tried and ever successively abandoned method of treatment by means of arsenic—remains the surest, and, with slight modifications, still in our time after 400 years of experience, maintains its vogue." He calls this discovery of the use of mercury one of the greatest ever made in therapeutics. He proclaims the French physicians and surgeons of the fourteenth century who pointed out its exact indications, as among the greatest of therapeutists. Perhaps, he adds, they owed some of their knowledge to the Italians of the end of the thirteenth century, but in any case it is to the careful French observers that medicine owes probably this greatest of its triumphs in healing.

Arsenic has indeed a most interesting therapeutic history and at various times has been in vogue for different diseases. Again and again it has been advanced as a rival to mercury in syphilis. It is almost the only drug that has ever been seriously advocated as a competitor of quinin in the treatment of malaria. It has been particularly recommended in chronic malaria, though occasionally, even in acute stages, some special form of arsenic has been recommended. Now that we know that syphilis is due to a parasite biologically resembling the *Plasmodium malariae*, that is, an animal rather than a plant parasite, this effect of arsenic is not surprising. It has, however, in malaria, never achieved the success of quinin.

The knowledge of the many previous experiences with arsenic should prevent enthusiastic acceptance of any new form of arsenic therapy until it has been thoroughly tried. Though known and feared as a deadly poison, it has been recommended many times for many different diseases, usually with a great blare of trumpets. At best, even with our present knowledge, it can be classed only as one of the alterative drugs whose effect is so subtle that it can only be characterized as an "alteration in metabolism." There could scarcely be a more generic classification of a drug. It seems probable, however, that the mystery of the apparent manifold usefulness of arsenic is due to its toxic effect on animal parasites. Unfortunately for the enduring success of the arsenical remedies, most of these animal parasites seem, like the human being himself, to acquire a tolerance for it after a time. At least, some sort of an immunity against its effects seems to develop that sadly hampers its subsequent therapeutic usefulness. The chapter of previous experiences with remedies is one of the most interesting and valuable in the history of medicine.

WINTER SPORTS AND HEALTH

In several respects mountain-climbing is a peculiarly wholesome form of athletic sport for the large number of persons whose vocations are sedentary. The indoor life which these persons commonly lead and the protection from even the slightest rigors of climate which their mode of housing and places of work afford them are more than likely to render them oversensitive to the extremes of weather. It is for precisely such unexposed persons that an occasional trip to the highlands and an alpine excursion has most refreshing recuperation and stimulus in store. The heart is called on to exert itself to a degree which, in an otherwise healthy subject, will be followed only by the invigoration characteristic of most exercise. The advantage is not confined to a single organ; for the respiratory mechanism, the entire musculature of the body as well as the cardiac and circulatory apparatus, and the general metabolic processes apparently benefit in ways not readily definable in accurate scientific terms. In addition to an indefinable feeling of well-being, considerable skill is acquired in certain of the performances of mountain-climbing or other feats of alpine sport. The combination has shown its wholesome and invigorating influence on many an individual suffering from the "fag" of a life of physical inactivity.

There was a time when the patronage of the mountain resorts was confined to the summer months. To-day winter sports attract visitors to the same surroundings. It is not, as a rule, the invalids who sit on porches or the lethargic aged who are found visiting the highland regions in winter, but rather those who are ready to participate vigorously in the pastimes that call for muscular exertion and endurance. Zuntz of Berlin, to whom we owe much of our scientific information with regard to alpine physiology, has recently investigated in a somewhat cursory way the effect of a rather severe outing and mountain climb in the depths of winter, on a large group of physicians ranging in age from 30 to 60.¹ Their testimony may be assumed to be based on intelligent, trained observation. The evidence indicated that even very unusual degrees of muscular activity under environmental conditions making extreme demands on the heat-regulating apparatus of the body—as happens during mountaineering in a snow-storm—are as a rule without detriment to the participants. On the contrary, even a sedentary person unaccustomed to either the exercise or the rigor of the climate may actually exhibit benefits. Those who are free from addiction to alcoholic beverages and are somewhat used to moderate daily exercise seem to enjoy the exhilaration most keenly. Even the untrained, however, who have found the unusual demands on their muscular and cir-

1. Zuntz, N.: Zur Kenntnis der Einwirkung des winterlichen Höhenklimas auf den Menschen, Ztschr. f. Balneol., Klimatologie u. Kurort-Hyg., 1914, vi, No. 18.

culatory apparatus rather strenuous and sometimes unpleasant, may feel the beneficial after-effects, expressed in improved cardiac and vasomotor functions.

It is not intended here to maintain that the "snow sports" are ideal for all. Common sense would forbid such a sweeping dictum; but precisely as the night air, and sleeping in the open all year around have been shown by modern practices to be without danger, so winter sports even in a severely cold climate may be utilized in outdoor life, even without preparatory training for a supposedly dangerous hygienic undertaking.

THE NEW PUBLIC HEALTH IN NEW YORK

Numerous attempts have been made to crystallize in legislative form the conclusions drawn from recent advances in preventive medicine. Sometimes these attempts have taken detailed form, as in the legislation against the common drinking-cup and roller towel, but there is evidence that it is now passing into the broader phase of general public health organization. The development of this movement is of the greatest importance to the medical profession. If it tends to reduce illness and disease of certain kinds and so in a sense curtails the opportunities of the medical practitioner, it also opens up the possibility of a new career in which service to the individual will be replaced by service to the state. The recent reorganization of public health administration in the state of New York is in many ways a significant step.

The working of that part of the new public health law of New York State which delegates to a public health council of seven members the power to establish a sanitary code for the state (outside of New York City) will be watched with particular interest. The conferring of such powers on the boards of health of cities is a common phenomenon, and in state legislation the same principle has been applied to industrial problems. It is as yet, however, novel in the field of state hygiene. The responsibility conferred on a small body by such a plan is a serious one, but the personnel of the New York Public Health Council is such as to inspire confidence in its discretion. Physicians will recognize Commissioner Biggs, Dr. Simon Flexner and Dr. T. M. Prudden as eminently qualified to represent the medical profession of the state; and of the three lay members, Mr. Homer Folks is well known for his many services to the cause of social reform, particularly in connection with the campaign against tuberculosis; H. N. Ogden is professor of sanitary engineering at Cornell University, and Mrs. Elmer Blair is the chairman of the health committee of the National Federation of Women's Clubs.

The first sections of the sanitary code, dealing with communicable diseases, which went into operation

May 1, declare twenty-four diseases to be "communicable" and therefore notifiable, including some diseases like dysentery and streptococcus sore throat, about which it is highly desirable that we should acquire more precise information, and omitting cancer and pneumonia, which have been made notifiable in some communities without sound reasons. The physician is required to report these diseases to the local health officer within twenty-four hours, as is the "superintendent or person in charge of every hospital, other institution or dispensary." Special duties as to reporting are laid on teachers and school principals, proprietors or keepers of hotels, boarding houses and lodging houses, visiting nurses and public health nurses, and persons in charge of labor or other camps, and the masters or persons in charge of vessels.

The code is essentially modern in emphasizing isolation rather than quarantine. Households are to be quarantined *en bloc* only as a last resort when neither proper isolation on the premises nor removal to a hospital can be accomplished. Minimum periods of isolation for various diseases are specified for the patient himself, and maximum periods of incubation for those exposed; but the prolongation of the former and the shortening of the latter are left to the discretion of the local health officer. Exposure of children or minors to persons affected with measles or whooping-cough, as well as diphtheria, scarlet fever and small-pox, are specifically prohibited, and stringent regulations forbid the handling of milk or other foods by persons suffering from communicable disease.

The attitude of the Public Health Council toward disinfection is another notable indication of present-day tendencies in sanitation. Particular weight is laid on the prompt disinfection of excreta in the intestinal diseases and of discharges from the nose, mouth and ears in the others, and the physician is required to give detailed instructions on this subject on his first visit. The health officer must furnish special circulars of instruction to the family. On the other hand, at the termination of the disease, rooms, furniture and belongings are required to be cleansed, renovated and disinfected only "when deemed necessary by the local health officer, or required by this code, or otherwise by law," the last two clauses pointing to hypothetical future requirements and not to any now in existence.

These sections of the code are published as Special Bulletin No. 2 of the New York State Department of Health in conjunction with a series of regulations for cleansing and disinfection which state in detail the procedures which the department considers necessary under various circumstances. Together they form a sane and well-balanced digest of the best practice in modern preventive medicine. The first instalment of the work of the Public Health Council goes far to

justify the high hopes which have been entertained of the work of that body, and its enforcement should make possible a control of communicable disease such as has never yet been attained in the United States, outside of a half dozen of the larger cities.

Current Comment

DEPARTMENT OF HEALTH BILL ABANDONED

According to Washington correspondents, President Wilson has announced a legislative program for the remainder of his administration. Greatly to the regret of his many supporters and admirers in the medical profession, he has not considered it advisable to include in his program a bill for the creation of a national Department of Health. This measure, endorsed by the Democratic party at Baltimore, is one of fourteen propositions thrown overboard. If reports are correct, the President for the remainder of his term will urge the passage of only four measures: a bill regulating the development of water power in navigable streams; a bill providing for the leasing of mines and other resources on the public domain; a bill providing for eventual independence of the Philippines, and a bill providing for the purchase of merchant vessels. The proposition for the creation of a national Department of Health is the last subject but one on the list of fourteen discarded measures. Mr. Wilson, during his term of office, has secured much important legislation. He has also guided the nation through the intricacies of the Mexican and Japanese situations and the present European war muddle. These might well be regarded as sufficient accomplishment for two years. In seeking to limit his activities during the rest of his term to a few measures which can be passed, rather than to a large number of doubtful propositions, Mr. Wilson is acting wisely. The only difference of opinion which can arise is the relative importance of the four subjects selected as compared with those rejected. The development of water power and the control of natural resources are in line with the conservation campaign which has received support throughout the country. The purchase of merchant vessels is an emergency measure brought about by the present European war. The independence of the Philippines is a moral rather than a political question. The selection of these four subjects does not necessarily indicate that they are, in the minds of the administration, of paramount importance, but rather that, in proportion to their importance, they are, perhaps, more fully supported by public opinion. Yet it is a strange paradox that the conservation of water power and mineral wealth should be placed before the conservation of human life. Perhaps if we had no federal health machinery of any sort, the situation might be regarded as more urgent. As a matter of fact, our Public Health Service has developed into a most efficient bureau, and is

doing excellent work. It is not a question, however, of the value of the present organization, but whether a better one might not be obtained. Yet the very efficiency of the Public Health Service may have been one of the factors which led Mr. Wilson to abandon, for the present, efforts for a national Department of Health. Whatever may have been the reasons, it is to be regretted that this measure has been temporarily given up by the administration. Its endorsement by the Democratic party and its support by Mr. Wilson aroused strong hopes that it would be taken up as an administration measure and pushed to practical consummation. Apparently, such expectations must be temporarily abandoned. It is to be hoped that before the next presidential campaign the popular demand for advanced public health legislation will be so strong as to lead all of the national parties to include an endorsement of this measure in their platforms. In the meantime public education must continue, with a view to ultimate rather than immediate results.

THE VASOMOTOR APPARATUS IN PNEUMONIA

There is a wide-spread belief that the vasomotor cells of the nervous system are peculiarly susceptible to the harmful effects of a variety of toxic agencies. Apparent failures of the circulatory apparatus to respond in a normal way to the demands made on it in certain abnormal conditions are very commonly charged to inefficiency or fatigue of the vasomotor center, which has accordingly been made responsible, in the lack of more tenable explanations, for pathologic manifestations of varied sorts and diverse origin. In pneumonia, cardiac failure is generally ascribed to the effect of the toxins on the heart, although less commonly complicating conditions such as pericarditis and collateral edema or previous organic disease of the heart are called to account for the symptoms. Vasomotor paresis affecting the splanchnic area is further charged with being a factor in the heart exhaustion. One of the foremost American investigators of the physiology of the circulation, Prof. W. T. Porter of the laboratory of comparative physiology in the Harvard Medical School, now denies the long-maintained proposition that the toxins of pneumonia specifically injure the vasomotor cells of the organism. He and his colleagues¹ have subjected this important question to study in animals in which experimental pneumonia was produced either by injection of cultures of infective organisms down the trachea into a bronchus or by introduction of pneumococci directly into the circulation. The condition of the vasomotor center can be determined by measuring the reflex change in blood-pressure produced by stimulating various afferent nerves. The Boston investigators admit that earlier experimenters, using the methods of their day, have failed to show a normal change of blood-pressure in this way; but with more perfect methods they have now demonstrated a normal vasomotor reflex in indi-

1. Porter, W. T.; Newburgh, L. H., and Newburgh, L.: The State of the Vasomotor Apparatus in Pneumonia, *Am. Jour. Physiol.*, 1914, xxxv, 1.

viduals with almost wholly consolidated lungs and about to die. Thus, even in fatal pneumonia, the experimental evidence proves that the vasomotor center is not impaired. To those who are inclined to place disease symptoms and their etiology in man on a plane by themselves it may be of interest to add that it was possible, in the types of animals studied, to imitate many of the phenomena seen in the human forms of pneumonic invasion. In some there were acute inflammatory processes of the lung-tissue, of the bronchopneumonic type; in others there were the familiar areas of consolidation, easy of clinical recognition. The vasomotor reactions were comparable in all.

THE ASSOCIATION PROTECTS THE PUBLIC

In the Propaganda for Reform department of this issue there is a brief notice of the unsuccessful attempt on the part of Dr. Peter P. Duket to persuade the citizens of Las Vegas, New Mexico, to capitalize his worthless scheme. Fortunately through *THE JOURNAL*, the medical profession of the town had been made familiar both with Duket's methods and his worthless "cure." As a result, the business men of Las Vegas gave short shrift to the faker. The case is merely one of many in which *THE JOURNAL* has been the means of protecting both individuals and communities against fraud. The cases are so common that we seldom give much thought to the problem involved, the work of the Association in this direction being taken as a matter of course. It is worth while, occasionally, to call attention to the fact that there is at present no other agency doing this work. It is fair to assume that had *THE JOURNAL* not investigated and exposed the methods of Duket he would have been successful in persuading the business men of Las Vegas to help finance his scheme. Here then is a scientific organization performing an altruistic and very real service to the public—a service that is not measurable in mere dollars and cents. And for such work as this the beneficiaries of medical frauds vilify the American Medical Association.

and Eckels at the University of Missouri,² according to which the appearance in the system of carotin when fed in excess may be explained on the ground of its greater stability toward the digestive processes as shown by the digestion experiments and the abundant appearance of the pigment in the feces. The failure of the xanthophylls to appear to any extent in the system may be due similarly to the fact that they are apparently more easily destroyed during digestion. If fat is present to any extent some of the xanthophylls will undoubtedly be taken up and enter the circulation dissolved in the fat. There is, in fact, evidence to show that what xanthophylls can be found in the blood are present dissolved in fat. In those species in which fat plays a greater part in the food than it does in cattle, xanthophylls are likely to appear to a greater extent in their bodies, since it can be more readily transported therein. This seems to be the case in man; for although the fat of human milk may be tinted by both carotin and xanthophylls, the relative proportion of the latter is usually greater than in the familiar carotin-rich fat of cow's milk.

WHAT'S IN A NAME?

A large, gray stone building stands in a garden plot, its red tiled roof and striped awnings giving a sense of alertness and vivacity. Under its spreading trees on benches and on the cool green lawn sit groups of aged men and women with here and there a younger one in a rolling chair or reclining seat. The observer passing by stops to smile at the serenity and peace of the scene. And then as he passes the door there blazons up before him in glaring letters the words "Home for Incurables." Mingled with his feeling of pity there comes something of shock. Some institutions—why not all?—are called by non-committal and inviting names like "Rest Haven," "Placid Retreat" and "Shadow Lawns." To its inmates and even to visitors the hospital, home or sanatorium will be more pleasant under a more attractive title suggesting rest and quietude.

THE FATE OF THE YELLOW PLANT PIGMENTS, CAROTIN AND XANTHOPHYLLS, IN THE BODY

Among the pigments which have a wide-spread occurrence in food materials of both animal and vegetable origin are the xanthophylls and carotin, the relation of which to the yellow lipochrome of milk-fat, body-fat, blood-serum and the corpus luteum has already been reviewed in *THE JOURNAL*.¹ Xanthophylls are quite as widely distributed in green plants as is carotin, yet the latter preponderates in the pigment collections which are found in the animal tissues of such species as the cow that ingest the plant pigments. The reason for this is suggested by the investigations of Palmer

GLYCO-THYMOLINE—NOT A HARMLESS FRAUD

In the Propaganda Department this week, the Council on Pharmacy and Chemistry publishes a report on Glyco-Thymoline. To many of our readers, doubtless, the thought will come: Why devote space to a product that is comparatively harmless while there are so many really vicious frauds on the market? The answer is that Glyco-Thymoline is not harmless but vicious as at present exploited. The stuff, as every physician knows, is a mild, alkaline antiseptic practically devoid of germicidal power. As such it doubtless has a place as a simple home remedy, to be used as a mouth wash or cleansing agent. Undoubtedly, this is what the stuff is largely bought for, and

1. *The Natural Yellow Pigments Occurring in the Body*, editorial, *THE JOURNAL A. M. A.*, Sept. 12, 1914, p. 948.
The Relation Between the Color of the Body-Fat and the Breed of Cattle, editorial, *THE JOURNAL A. M. A.*, Oct. 3, 1914, p. 1210.

2. Palmer, L. S., and Eckles, C. H.: Carotin—The Principal Natural Yellow Pigment of Milk Fat: Its Relations to Plant Carotin and the Carotin of the Body Fat, Corpus Luteum and Blood Serum. IV. The Fate of Carotin and Xanthophylls during Digestion, *Jour. Biol. Chem.*, 1914, xvii, 237.

if the manufacturers confined their claims for it within these limits there could be no reasonable objections to it. Unfortunately, however, the "patent medicine" business has been steeped in falsehood and fraud for so many years that it is seemingly impossible for those engaged in it to play fair with the public. Glyco-Thymoline is inferentially recommended in such serious conditions as diphtheria, ophthalmia in the new-born, consumption, etc. The danger of such recommendations, even though made indirectly rather than directly, are patent to every thinking physician. Yet, the wide sale of Glyco-Thymoline can be charged wholly to physicians. So far as we know, the manufacturers have never advertised directly to the public. Their periodical advertising has been in medical journals, and the doctors, who have prescribed the stuff—with the name blown in the bottle and the suggestions for medication in the pamphlet around the bottle—have done the rest. Physicians, therefore, must shoulder the responsibility. This is the excuse, if excuse is needed, for the Council taking up for consideration a product, which however harmless in itself, is, through its method of exploitation, a menace to public health.

Medical News

COLORADO

Nomination of Dr. Work for Senate.—Dr. Hubert Work, Pueblo, is a candidate for the United State Senate on the Republican ticket, having been nominated at the direct primary by a large majority over the other candidates.

DISTRICT OF COLUMBIA

No Epidemic of Typhoid.—Dr. William I. Woodward, health officer of the District of Columbia, calls attention to a statement that an epidemic of typhoid was taking place there. He says that on September 30 there were in the District of Columbia ninety-six cases of typhoid fever, a record which is better than for any of the years from 1910 to 1913. The population of the District of Columbia, as determined by a census taken in the spring of 1913, was 353,297. The conditions must, therefore, be considered as quite favorable.

ILLINOIS

Zone of Quiet for Hospitals.—An ordinance was introduced in the city council of Quincy, September 24, providing for a zone of quiet within 200 feet of all hospitals.

Personal.—Dr. Catherine B. Slater, Aurora, has returned from abroad.—Dr. Charles N. Hazelton, Morrison, announces his retirement from active practice.

New Hospital.—Work on the new Lutheran Hospital between Rock Island and Moline will commence in the early spring. More than \$40,000 of the \$50,000 required has already been raised.

Diphtheria in Barrington and Oak Park.—In Barrington it is reported twelve children are sick with diphtheria. In Oak Park Mr. W. H. Hatch, superintendent of schools, has ordered the Washington Irving School closed for a week to prevent the spread of diphtheria, as cases have recently been reported among pupils of that institution.

Clinical Pediatric Meeting.—The Chicago Pediatric Society will hold a clinical meeting for physicians interested in diseases of children in Chicago on October 29-31. Clinics will be held at Wesley, Michael Reese, Children's Memorial, Cook County, Presbyterian and Anna Durand Hospitals and at the Home for Destitute Crippled Children. Arrangements also will be made for visiting the stations of the Infant Welfare Society. A more definite program with schedule will be sent to those who desire it.

Merger of Boards.—The consolidation plan outlined by the State Efficiency and Economy Commission was discussed at a joint meeting of the commission, the State Board of Health, State Water Survey, Food Commission, Illinois State Medical Society, Illinois Homeopathic Medical Association, Chicago Medical Society and Chicago College of Medicine and Surgery, September 29. The plan was generally agreed to.

Chicago

Personal.—Dr. Winfield Scott Hall and family returned from Europe September 15, after nearly a month of effort to cross belligerent countries and reach the port of embarkation.—Dr. Albert J. Ochsner, who has been suffering from an infected finger in the Hospital of Good Shepherd, Syracuse, for several days, is reported to be improving.

Tablet Dedicated.—The Sisters of Mercy, in a celebration of the sixty-eighth anniversary of their arrival in Chicago, placed a tablet at the Mercy Hospital in memory of the late Ferris S. Thompson, who died in France nearly two years ago, leaving \$300,000 to the hospital.

Demands Colony for Defectives.—Dr. William J. Hickson, head of the Municipal Psychopathic Laboratory, stated to the members of the City Council on Crime, September 26, that crimes committed by morons, sociopaths, feeble-minded and morally weak individuals, are not to be regarded as such, but that such persons should be placed in a colony maintained by the state, county or city. He estimated that the colony could be established for about \$900 a bed and should have accommodations at first for 1,000 patients.

Health Ruling Sustained in Ruling on Motion-Picture Theater Ventilation.—On Sept. 22, 1913 air samples taken in a picture house showed a pronounced violation of the ventilation ordinance. As the proprietor would not comply with the order of the Health Department, his theater was closed. He obtained an injunction restraining the city from interfering with the operation of the theater until the case was tried in court and the validity of the case tested. A decision was rendered Sept. 22, 1914. The decision sustained the action of the Health Department in closing the theater, and also sustained every portion of the ordinance with exception of the relative humidity clause, which the court decided was unintelligible on account of typographical errors in printing. The *Chicago Health Bulletin* states:

Over 2,800 pages of testimony were taken from experts, not only from Chicago, but from other states as well. All features of the ordinance were thoroughly investigated, the quantity of air required per person; the carbon-dioxid content and the matter of prevention of draft received the closest scrutiny; the methods employed in analyzing the same were gone over; in fact, samples were analyzed by the department's chemist in the presence of the master. These samples were taken in various places; in the master's room and in various other indoor localities; also samples of outside air, which were sealed and analyzed by the chemist without his having any knowledge as to where they were obtained. In short, the entire case from beginning to end was marked by its comprehensiveness and attention to detail.

The theater-going public is to be congratulated on the fact that every contention of the department and every provision of the ordinance were sustained in spite of the long-drawn-out fight that was made against it.

INDIANA

Personal.—Dr. Arthur E. Guedel has been appointed superintendent of the Deaconess Hospital, Indianapolis, succeeding Dr. Augustus L. Marshall, who has resigned in order to devote himself to private practice.

Housing Law to Be Enforced in South Bend.—A rigid enforcement of the Indiana housing law is to be inaugurated by the board of public health in South Bend. An investigation conducted by the mayor and Dr. Charles S. Bosenbury showed that in certain tenement districts of the city, both municipal and state housing laws were being violated.

Tuberculosis Camp Opened.—The new Tuberculosis Sanatorium for St. Joseph County, near South Bend, has been opened and now has eleven patients. When fully equipped the institution will accommodate thirty-two patients. Dr. James A. Duggan, formerly of Baltimore, is superintendent of the institution. The hospital has been built at a cost of \$20,000 and is located on a site of 93 acres. It will be formally opened some time this month.

Whiting Establishes New Health Service.—The city council of Whiting has made a liberal appropriation to be used by its health department in employing assistants to the commissioner. A department of hygiene and sanitary instruction has been instituted and Miss May H. Cox, a visiting nurse of Chicago, who has had experience in school work with the health department of that city, has been placed in charge of

similar work in Whiting. Dr. E. L. Dewey, the commissioner, is convinced that great good will be done in the interest of the public health and child welfare with the assistance given by the new appropriation.

Disease Prevention Day.—Disease Prevention Day held in Indiana, October 2, was everywhere characterized as a great success. In Indianapolis more people viewed the street parade than have ever assembled for any parade in that city. The good this demonstration will do as an educator of the people concerning the value of disease prevention may be regarded as enormous. As a spectacle, the parade was a tremendous success. Schools were dismissed for the occasion and everyone entered enthusiastically into the work. The Public Health Nursing Association, the Children's Aid Association, the Marion County Graduate Nurses' Association, the Indianapolis Day Nursery, the Sisters of Charity, colored hospital, the colored tuberculosis camp, the local council of women, the State Board of Health, the Manual Training High School, the musicians' union, the W. C. T. U., as well as many other organizations, contributed floats of great interest. Many business firms contributed elaborate floats representing the expenditure of much time and money. The Indianapolis Humane Society made an important contribution showing the care of animals. Many automobiles containing prominent physicians of the state, were in line as well as contingents of police, militia and schoolchildren. Dr. J. N. Hurty, secretary of the State Board of Health, gave an address on the study of disease prevention to the students of Butler College. Merchants of the state placarded their windows and in their advertisements in the daily newspapers called attention to methods of disease prevention embodied in their plants. In Brazil disease prevention day was observed in the public schools and speeches were made in the high schools. In Marion, Dr. Ada E. Schweitzer, Indianapolis, of the city department of public health, gave two addresses on the observance of disease prevention. Marion physicians spoke in all the grade schools. In Gary, Ind., several thousand persons took part in the day's observance. Five thousand were in the parade. In New Albany the demonstration included a street parade and numerous public meetings. In Fowler, Huntington and Greencastle there were large parades, and speeches by physicians and public officials. Important programs were also followed in Terre Haute, Columbus, Petersburg, Greenfield and Claremont. The entire celebration is significant of the public interest in its health being built up in this progressive state and as showing what may be accomplished when the public itself demands that health interest be primary.

LOUISIANA

Organization of New Parish Medical Societies.—The following parish medical societies have been organized: On September 24, Concordia Parish, Ferriday; the officers being Dr. Marcus C. Reeves, Vidalia, La., president; Dr. Charles H. Burley, Monterey, La., secretary and treasurer. On September 28, Washington Parish Society, Bogalusa, the following officers were elected: Dr. Elbert E. Lafferty, president; Dr. Joseph S. Kopsler, secretary and treasurer. The former society was aided in its organization by Dr. Oswald W. Cosby, counselor of the state medical society, and the latter by Dr. J. W. Lea.

Itinerary of Louisiana Health Car.—The health car of the State Board of Health of Louisiana, of which the first trip was announced in THE JOURNAL for September 26, has completed an itinerary of two weeks, during which time it visited four important states. The response on the part of the community was all that could be desired. The car contained a creditable plague exhibit, including infected and normal rats, slides and other laboratory preparations. No attempts were made to advertise the car, but during its stay in each town, Dr. Oscar Dowling, Shreveport; Dr. William H. Seemann, New Orleans; Dr. Charles C. Bass and Mr. A. J. Terhune held conferences with interested physicians. Several councilors of the state medical society joined the car in their respective districts. During its trip 6,350 visitors passed through the car, and 186 physicians. Thirteen lectures were delivered for white auditors. There were 3,860 present, and at twelve lectures for colored listeners 5,060 persons were present. Forty talks to physicians and the public were given in all.

MARYLAND

New Surgical Equipment.—Improvements have been inaugurated in the surgical department of the Maryland General Hospital, which will be entirely renovated by members of the ladies' auxiliary of the institution.

Medical Society Entertained.—The Baltimore County Medical Society was the guest of Drs. G. Carville McCormack and Frank C. Eldred, Sparrows Point, president and treasurer of the association, respectively, at an outdoor oyster roast, September 16.

Johns Hopkins Medical School Opened.—The Johns Hopkins Medical School opened October 6. A new record of registration was made, the total of new applications reaching 214. There are 30 women students, one of whom is Chinese. The four classes total 366 members, as follows: 94 in the first year, 92 in the second year, 89 in the third year and 91 in the fourth year.

To Erect Phthisis Hospital.—Steps have been taken toward the establishment of a sanatorium for the care and treatment of indigent persons suffering from tuberculosis in Montgomery County. The Montgomery County Tuberculosis Commission and the Social Service League have charge of the project. At the last session of the legislature, \$5,000 was appropriated for the establishment of a sanatorium in this county provided \$10,000 were raised by the citizens. The law also provides for an annual maintenance appropriation by the state on condition that the county raise double the amount. It is estimated that it will cost \$15,000 to purchase a site and erect and equip the necessary buildings.

Joint Meeting of Medical Societies.—The Maryland Psychiatric Society and the Washington Society of Nervous and Mental Diseases held a joint meeting October 2, at Chestnut Lodge Sanitarium, Rockville. The program included a general discussion of paresis and tabes, opened by Dr. Sydney R. Miller, Baltimore, of the Phipps Psychiatric Clinic, followed by Drs. William Hough and William A. White of the Government Hospital, Washington; Dr. Adolf Meyer, Baltimore, of the Phipps Clinic and Dr. Tom A. Williams of Washington. Dr. Ernest L. Bullard presided and Dr. William Rush Dunton, Jr., and Dr. John J. Madigan were secretaries, respectively, of the Maryland and Washington societies.

MASSACHUSETTS

State Health Commissioner Appointed.—Surgeon Allan J. McLaughlin, U. S. P. H. S., has been appointed health commissioner of Massachusetts at a salary of \$7,500 for a five-year term.

Maternity Hospital Donated.—An anonymous gift of \$100,000 for the erection of a maternity hospital on the site near the Boston University School of Medicine, was announced at the opening exercises of the school.

Milk and Baby Hygiene Association Appeals for Funds.—The treasurer of the Milk and Baby Hygiene Association, Boston, announces that \$8,000 is actually needed to complete the year's work of the association; and if this amount is not received, curtailment of the society's efforts will be necessary.

Ether Day.—The trustees of the Massachusetts General Hospital announce that the sixty-eighth anniversary of Ether Day will be celebrated at the Hospital Amphitheatre of the outpatient department of the hospital on October 16. The address will be made by Dr. John M. T. Finney, Baltimore.

Floating Hospital Ends Work.—The Boston Floating Hospital has ended its work after a very busy season. Dr. Paul Waldo Emerson, St. Louis, house physician, has not yet decided on his work for the winter; Dr. Meredith R. Johnston, senior house officer, will go to the Children's Hospital, and Dr. Joseph A. Levek to the Massachusetts General Hospital.

Bulletin of the Massachusetts State Board of Insanity.—The board has voted to issue bulletins each month to inform the state hospital trustees, members of the several staffs and others interested with regard to the progressive and constructive work being done in individual institutions. In the first bulletin, dated September, the announcement is made that it is not the policy of the board to approve the appointment of any staff physicians who have not had previous experience in the care or treatment of the mentally ill or who have not taken special courses in such work. Arrangements have been made with the psychopathic department of the Boston State Hospital to give special courses of from three to six months to prospective candidates who could not otherwise qualify. Such men will be taken as interns and given free instruction and board but no salary until they are fitted for positions as members of the staffs. If a candidate seems unfitted for the position at the end of from three to six months, he is to be definitely rejected. The board has undertaken a survey of outpatient work by the hospitals and now recommends that such work be extended and made to cover the care of discharged patients. The following changes are

announced as having occurred in staffs of the different institutions during August: Dr. Thomas H. Haynes resigned from the psychopathic department; Dr. William H. Lane, Waverly, resigned from the Massachusetts School for the Feeble-Minded; Dr. R. Grant Barry, King Park, N. Y., appointed physician at Worcester Hospital; Dr. Chester A. Van Cor appointed physician at Gardner Colony.

MISSISSIPPI

Home from Abroad.—Dr. Donald P. Street, Vicksburg, has returned after a three-months trip abroad, and has resumed practice.

State Public Health Meeting.—The annual convention of the Mississippi Public Health Association will be held at Jackson, October 27 and 28, under the presidency of Dr. Walter S. Leathers, University. Among the more prominent topics for discussion are malaria, bubonic plague and tuberculosis.

MISSOURI

Lack of Medical Inspection Blamed for Diphtheria.—Seven cases of diphtheria were found in a single day near the end of September in the Irving School, Kansas City. The health department attributes the danger of an epidemic to false economy on the part of the city administration. Medical inspection, such as is required in other cities of the Middle West, would probably have averted the danger.

Free Dispensary Established.—A free clinic and dispensary for children and mothers has been established in Kansas City. The dispensary will be for the treatment of children up to 14 years of age, and will furnish instructions to mothers regarding the proper care of infants. Especial attention will be given to treatment of eye, ear nose and throat diseases. The fifth floor of the Waterworks Building has been leased for its use.

NEVADA

Home from Abroad.—Dr. A. Miniggio, Reno, returned September 22, after a year in Italy.

State Society Meeting.—The eleventh annual meeting of the Nevada State Medical Association will be held in Reno, October 13 to 15, under the presidency of Dr. Arthur P. Lewis, Reno.

New Hospital.—Plans have been made and bids have been asked for the construction of the new hospital at Asheville. The building is to be located near the present buildings of St. Joseph's Infirmary, it is to be brick, reinforced concrete and to cost \$100,000. It will be under the charge of the Sisters of Mercy.

NEW JERSEY

Free Vaccination to Be Discontinued in Trenton.—The health department discontinued free vaccination September 23. It was estimated that 8,000 persons had been vaccinated during the summer.

NEW YORK

New York City

Sail for Red Cross Duty.—Drs. Archibald McL. Strong, Sumner Everingham, Robert F. Corry, Lester B. Rogers, Richard Derby and Joseph P. Hogue have sailed for Europe to join the field staff of the American Ambulance, Paris.

Harvey Society Lecture.—The first lecture of the Harvey Society series for the year is given at the New York Academy of Medicine, October 10, by Dr. Frederick P. Gay of the University of California, Berkeley, on "Experimental Studies on Methods of Antityphoid Immunization."

Guard Against Cholera.—On account of the report of the appearance of cholera in epidemic form in Europe, Dr. Joseph H. O'Connell, health officer of the Port of New York, has instructed boarding officers to make careful inspection of all vessels, passengers and crews coming from infected ports.

Septic Sore Throat Reportable.—Owing to the numerous epidemics of septic sore throat that have occurred during the past year, and especially on account of the recent experience at Rockville Center, L. I., the Sanitary Code now requires that this disease be reported to the Department of Health. It is incidentally pointed out that these epidemics furnish an additional argument in favor of the pasteurization of the milk-supply.

Personal.—Dr. Oliver W. H. Mitchell, formerly of the University of Missouri, has been appointed professor of bacteriology at the College of Medicine of Syracuse University. Dr. Edward D. Clark, Buffalo, has been appointed assistant professor of preventive medicine at the same institution and Dr. Howard L. Van Winkle, Glen Olden, has been appointed instructor in preventive medicine.—Dr. Lawrence S. Bart-

lett, Rochester, and Dr. and Mrs. James M. Wicks, Jamaica, L. I., have sailed for Europe.

Adenoid and Tonsil Operations.—There are now four clinics maintained by the Department of Health for the treatment of schoolchildren with adenoids and enlarged tonsils who are unable to afford a private physician. These clinics, which were formerly only open three days a week, are now in operation every day. During the week ending Sept. 5, 1914, 137 nose and throat operations were performed at these clinics. The average number of operations performed for three weeks preceding the inauguration of daily operations was seventy-seven.

Mayor Upholds Dog Order.—After a conference with Dr. Sigismund S. Goldwater, Mayor Mitchell announced that he stands on the side of the health commissioner in regard to the order of the Health Department that all dogs must be muzzled or kept on the leash. It is stated that this order, which has aroused considerable antagonism, is not necessarily permanent, but seemed necessary because of the increase in rabies. It was also explained that the order of the department forbidding the keeping of chickens within 75 feet of a dwelling was aimed at tenement dwellers and not at suburbanites.

Notifiable Diseases in New York City.—An amendment to the Sanitary Code passed the meeting of the Board of Health on August 25, requires that every case of infectious disease must be reported to the Department of Health within twenty-four hours from the time it is first seen. There are now twenty-nine infectious diseases reportable in this city. They are as follows: anthrax, asiatic cholera, diphtheria (croup), dysentery (epidemic), epidemic cerebrospinal meningitis, glanders, gonorrheal ophthalmia, hookworm disease, leprosy, malarial fever, measles, mumps, paratyphoid, plague, acute anterior poliomyelitis, pulmonary tuberculosis, rabies, rubella (German measles), tetanus, trachoma, tuberculous meningitis, typhoid fever, varicella (chicken-pox), whooping-cough and yellow fever.

Supervision of Typhoid.—All cases of typhoid fever reported in the borough of the Bronx will hereafter be investigated by the district nurses of the Bureau of Infectious Diseases. In every case the district nurse will be expected promptly to secure the epidemiologic data called for by the department's history card. In addition to this, she must learn what persons are exposed to infection and how many of these would accept immunization. In every case the attending physician will be requested by telephone to permit the Department of Health to immunize the exposed individuals, or to do so himself, the department offering to furnish the necessary culture free of charge. When no trained nurse is in attendance on a case, the nurse must make sure that excreta are properly disinfected and disposed of and that the person caring for the patient does not cook or handle the food for the family. If the family cannot carry out the necessary requirements, it may be necessary to have the sanitary policeman warn the family or forcibly remove the patient to a hospital. Wherever two or more families at different premises have typhoid fever and the same milk-supply is being used, an immediate investigation of that milk-supply will be made.

NORTH CAROLINA

Antityphoid Vaccination.—The State Laboratory of Hygiene reports a heavy demand for free antityphoid vaccination during the summer. During the early part of the summer, the demand exceeded the power of the laboratory to supply it. Arrangements for increasing the output have been made in anticipation of an extended demand from schools and colleges at the time of their opening.

OKLAHOMA

Diphtheria Antitoxin to Be Distributed by the State.—Dr. J. C. Mahr, state health commissioner, is preparing to distribute diphtheria antitoxin through the local drug stores. It will be supplied free to those unable to pay for it and at reduced rates to others.

PENNSYLVANIA

Personal.—Dr. George R. S. Corson, Pottsville, has been elected secretary of the Anti-Tuberculosis Society of Schuylkill County.—Dr. Harry W. Salus, Johnstown, has been appointed state medical inspector for Cambria County.—Dr. James P. Brallier, Alexandria, has returned from Europe.

Hospital and Sanatorium Notes.—The Ladies' Auxiliary of the Columbia Hospital has decided to purchase a Roentgen apparatus for use in that institution.—The Neversink

MEDICAL NEWS

1308

Mountain Sanatorium reports that it has twenty-five patients in the institution and an awaiting list of twenty-eight, and has asked the Burke County Tuberculosis Society at the annual meeting to increase its membership that these sufferers may have the benefit of the treatment.—The State Sanatorium at Hamburg was opened to receive patients the second week in September.

Optometrists Win Legal Point.—Under an equity decision handed down by President Judge Wilson, the Pennsylvania Optometrists' Association, claim to have won the first round of their fight against the State Board of Medical Education and Licensure, which is endeavoring to bring them under absolute medical supervision. The court by this decision admits merely that the optometrists have a right to an injunction if they can prove that all the claims put forward in their original bill are just. These claims will be the subject for a further equity hearing, the date for which has yet to be set. As the state board insists that the optometrists be licensed after November 1, it is expected that a hearing will be held this month.

State Association Meeting.—The Medical Society of the State of Pennsylvania held its sixty-fourth annual meeting concerning which note was made last week in Pittsburgh, September 22 to 24, under the presidency of Dr. Edward B. Heckel, Pittsburgh. The following officers were elected: president, Dr. John B. McAlister, Harrisburg; vice-presidents, Drs. G. Franklin Bell, Mountville, and Otto C. Wilkes-Barre; secretary, Dr. Cyrus L. Stevens, Athens, Gaub, Pittsburgh; assistant secretary, Dr. William H. Cameron, Pittsburgh; treasurer, Dr. George W. Wagoner, Johnstown (reelected); trustees, Drs. William T. Sharpless, West Chester; Frederick L. Van Sickle, Olyphant, and Alem P. Hull, Montgomery. The section on medicine elected Dr. Thomas G. Simonton, Pittsburgh, chairman, and the section on surgery, Dr. Floyd E. Keene, Philadelphia, chairman, and Dr. Albert R. Matheny, Pittsburgh, secretary; and the section on eye, ear, nose and throat, Dr. Robert Milligan, Pittsburgh, chairman, and Dr. John F. Culp, Harrisburg, secretary. Philadelphia was selected as the place of meeting for 1915.

Medical Institutions.—A one-story addition, 30x40 feet, to the accident ward of the Methodist Episcopal Hospital, is to be built. The structure is to be of brick and terra cotta and will cost about \$6,000.

Pemphigus, Not Leprosy.—Careful investigation by the health authorities into the cause of the death of Owen Hall, supposed to have died from leprosy, has demonstrated that the death was due to pemphigus.

Appropriation for Hospitals.—Director Richard H. Harte of the Department of Health received from councils, September 17, an appropriation of \$272,000 for the improvement of the Municipal Hospital, the completion of the Byberry Farms and the City Institution at Holmesburg.

For Sane Fourth.—The executive committee of the Reconstructed Fourth Association met at City Hall, September 30, and the following officers were elected: chairman, George McCurdy, president of common council; vice-chairman, Mrs. Samuel B. Jarden; honorary vice-chairman, Mrs. Rudolph Blankenburg; treasurer, the Rev. H. W. Hathaway, and secretary, James J. Hiatt.

Rat Extermination.—Director Richard H. Harte of the Department of Public Health and Charities invited several hundred business men to a conference on the extermination of rats, September 28. Assistant Surgeon-General Leland E. Cofer, Washington, Surgeon Fairfax Irwin, U. S. P. H. S., addressed the meeting and a special appeal was made for the cooperation of business men and property owners in the campaign against rats.

Personal.—Dr. Frank H. Hustead has been elected surgeon-general of the American Veterans of Foreign Wars.—Dr. Hunter W. Scarlet is on duty at the American Hospital in Paris.—Dr. Arthur A. Stevens has been appointed attending physician at the Philadelphia General Hospital, to succeed Dr. Augustus A. Eshner, resigned.—Dr. James M. Anders, who was in Frankfort, Germany, when war was declared, arrived home September 22.

Regional Tuberculosis Conference in Philadelphia.—The first North Atlantic States Conference on Tuberculosis, including New York, New Jersey, Pennsylvania, Maryland, Delaware, Virginia and the District of Columbia, will be held

in Philadelphia under the direction of the National Association for the Study and Prevention of Tuberculosis on Friday, October 16. The executive secretary states the object of the conference is "the mobilization of those who are engaged in the war against tuberculosis for the coming fall and winter campaign which we are planning to wage against this disease."

Colleges Open.—The opening exercises of Jefferson Medical College were held September 24, at the Clinical Amphitheatre. William Porter, president of the board of trustees, presided, and the introductory address to the ninetieth annual session was delivered by Dr. Jacob Parsons Schaeffer, New Haven, Conn., the newly elected professor of anatomy.—The University of Pennsylvania officially began its one hundred and seventy-fifth year on September 25, when the officers, faculties and entire undergraduate body assembled in Weightman Hall for the historic first chapel exercises. Provost Edgar F. Smith, Vice-Provost Josiah H. Pennyman and the deans of the various departments addressed the students.

Faculty Changes.—Dr. Herbert H. Cushing has been made professor of practical anatomy. Dr. Ardrey W. Downs, professor of experimental physiology; Dr. Vernon K. Suydam, professor of physics; Prof. Charles E. Vanderkleed, professor of analytical chemistry; Dr. John H. Small, associate professor of bacteriology; Dr. Eugene A. Case, associate professor of pathology; Dr. Philipp Fischelis, associate professor of histology and embryology; Dr. Guy Hinsdale, associate professor of climatology, and Dr. Arthur C. Morgan, associate professor of medicine; Dr. J. Stewart Rodman and Dr. John J. Gilbride, associate professors of surgery; Drs. Howard L. Jameson and Andrew Callahan, associates in medicine, and Dr. Robert F. Ridpath, associate in laryngology, in the Medico-Chirurgical College of Philadelphia.

VERMONT

Epidemic of Infantile Paralysis.—The present epidemic of infantile paralysis in this state, which has been running for eight or nine weeks, exceeds that of any previous outbreak of the disease here in number of cases and mortality rate. One hundred and forty cases have been reported since August 15. The mortality in the state has been about 20 per cent. The area affected is a large one. The disease is especially prevalent in the northern part of the state, from Rutland to the Canadian line. The largest number of cases has occurred in Barton (40) and the next largest in Burlington (37). The State Board of Health has succeeded in keeping all the cases under strict quarantine and is carefully keeping the history of all cases.

WASHINGTON

Personal.—Dr. William A. Taylor, Ellensburg, and Dr. and Mrs. W. G. Cassels, Seattle, have returned from abroad.

Medical Defense Fund Low.—At the annual meeting of the Washington State Medical Association, the legal defense fund dues were raised from \$5 to \$10 because of the increase in malpractice suits due to the operation of the industrial insurance law.

State Association Meeting.—The twenty-fifth annual meeting of the Washington State Medical Association was held in North Yakima, September 21 to 23, under the presidency of Dr. Cornelius J. Lynch, North Yakima, and the following officers were elected: president, Dr. Casper W. Sharples, Seattle; president-elect, Dr. John R. Brown, Tacoma; vice-presidents, Drs. Harry E. Allen, Seattle, and Charles F. Eikenbary, Spokane; trustees of first district, Drs. James R. Yocom, Tacoma, and Richard J. O'Shea, Seattle; trustees of second district, Drs. Frederick Epplen, Spokane; Frank E. Culp, Wenatchee; and delegates to the American Medical Association, Drs. Edward A. Rich, Tacoma, and Guy E. Peterkin, Seattle. Tacoma was chosen as the place of meeting for 1915.

GENERAL

Red Cross Needs Funds.—The American National Red Cross reported that of the \$325,000 received up to September 26, \$280,000 has already been expended and that more funds are urgently required.

Ohio Valley Physicians to Meet.—The annual meeting of the Ohio Valley Medical Association will be held in Evansville, Ind., November 3 and 4, under the presidency of Dr. Argus B. Willmoth, Louisville.

Cholera in Manila.—On September 25 it was reported from Manila that an outbreak of cholera had occurred, the first in twelve years, and nearly one hundred cases have developed in

two weeks and fifteen deaths, all natives, have been recorded. Every district of the city is infected with the exception of the American residential districts of Ermita and Malate.

Meeting of Mississippi Valley Physicians.—The fortieth annual meeting of the Mississippi Valley Medical Association will be held in Cincinnati, October 27 to 29, under the presidency of Dr. D'Orsay Hecht, Chicago. The oration in medicine will be given by Dr. Charles F. Hoover, Cleveland, and that in surgery by Dr. Lewis S. McMurtry, Louisville. The headquarters, places of meeting and exhibit hall are all in the Hotel Sinton.

Plague in New Orleans.—Since the report in THE JOURNAL of October 3, the plague situation has changed but slightly. The total number of rodents captured up to September 26 was 96,794; the total number of rodent cases up to October 1 was 177. The death is reported of case number 26, Clemence Alexander, who died at the Emergency Hospital, Sept. 30, 1914. This case was reported as suspicious on September 21, and diagnosis confirmed September 22. The total number of deaths up to October 1 is 8.

China Appeals for Aid for Sufferers from Famine and Drouth.—The American Red Cross has transmitted to the state department an appeal from China for help. Famine and drouth are causing great disturbances in Kiangsu, Hunan and other provinces. Conditions are serious in Kwangtung where the loss of human and animal life has been great. The Red Cross was prompted to take up the matter by a petition presented to the American minister in Peking by merchants of Kwangtung province residing in Shanghai.

Social Hygiene Conference.—In connection with its annual meeting in New York City, October 9, the American Social Hygiene Association has arranged a conference on social hygiene jointly with the Society of Sanitary and Moral Prophylaxis. The program includes addresses on social hygiene in relation to departments of public correction, life insurance, the church and its organizations, boys' and girls' organizations, departments of public health, education and the like. The public sessions will be held at the Assembly Hall of the Metropolitan Life Insurance Company's Building. A visit to the venereal-disease clinic of the New York City Department of Health has been arranged.

New Refrigerators for Conveying Milk.—The Baltimore and Ohio Railroad has installed four sanitary dairy refrigerator cars to handle milk daily between points in Ohio and Pittsburgh. Health authorities and railroad officials, who have examined the new cars, state they will retain uniform temperature for forty-eight hours with but a single icing when the thermometer registers 90 degrees and that the growth of bacteria while milk is in transit is inhibited. The cars are so constructed as to provide hermetic sealing and are finished in white enamel on the inside so they may be easily flushed. In each end are ice-bunkers extending from floor to roof and containing six brine tanks in which are carried ice and salt.

Meeting of Military Surgeons.—The twenty-third annual meeting of the Association of Military Surgeons of the United States was held at Cincinnati, September 29 to October 2. In the absence of Brigadier General Charles Adams, M. C., Ill. N. G. (retired), Col. Jefferson R. Kean, M. C., U. S. A., presided. A committee on membership was appointed, composed of one officer from each of the public services and one from the National Guard of each state. Washington, D. C., was selected as the next place of meeting. The following officers were elected: president, Col. Jefferson R. Kean, M. C., U. S. A.; vice-presidents, Surgeon-General Rupert Blue, U. S. P. H. S.; medical inspector, George A. Lung, U. S. N., and Col. Henry Allers, M. C., N. J. N. G.; Harrison, N. J.; and treasurer, Major Herbert A. Arnold, M. C., Pa. N. G., Ardmore, Pa. (reelected).

FOREIGN

Guatemala Raises Quarantine.—The Guatemala government has raised the seven-day quarantine regulation declared against New Orleans at the outbreak of bubonic plague.

Trachoma Inspection Lax in Porto Rico.—On September 17 a proclamation was issued by the director of sanitation suspending examinations of the eyes of schoolchildren for trachoma and stating that eyes will be examined gradually throughout the year. The children will be admitted to the schools without the certificate that they are free from this disease. In an open letter to the governor, Dr. Molina de St. Remy, a member of the Board of Medical Examiners at San Juan, protests against this laxity and points out that trachoma is practically epidemic in the island.

Jubilee of Public Health Service in Switzerland.—When in 1889 Dr. Schmid was appointed chief of the newly organized public health service in Switzerland, the enforcement of the regulations to control epidemics was all the work laid out for it. But during the twenty-five years since he has been constantly enlarging its field of work. The present high efficiency of the service, its pure-food work, the higher requirements for a medical license, the widespread system of isolation hospitals and disinfection stations, and the revision of the Swiss Pharmacopoeia are all due in large measure to Schmid's tireless zeal, and in token of appreciation a banquet was recently tendered him on the completion of his twenty-five years of service. The International Antituberculosis Association sent its secretary from Berlin to Berne to do him honor, and numerous other local national and international organizations were represented at the jubilee.

CANADA

News Items.—A retired French-Canadian doctor has promised \$50,000 toward the cost of equipping a French-Canadian regiment for war services.

University News.—Dr. Richard A. Reeve has resigned from the professorship of ophthalmology in the University of Toronto and has been succeeded by Dr. James M. MacCallum. Dr. George R. McDonagh has resigned from the professorship of otolaryngology and has been succeeded by Dr. David J. Gibb Wishart.

Professor Leathes Leaves Toronto.—Dr. John B. Leathes, professor of pathological chemistry in the University of Toronto, leaves Toronto in December for Sheffield, England, where he has been appointed professor of physiology in the University of Sheffield. Dr. Leathes came to Toronto only a few years ago from London where he was pathological chemist in the Lister Institute. He was one of the four Fellows of the Royal Society at the University of Toronto.

Canada's First Contingent.—With the First Canadian Contingent sailing some time last week went three field hospitals, one clearing hospital, two stationary hospitals and two general hospitals. The medical personnel of a general hospital (520 beds) is one commanding officer, nineteen medical officers, including one registrar; one matron and ninety sisters in the nursing staff. A stationary hospital consists of 200 beds with one officer commanding and six other medical officers. Of the nursing staff there is one matron and sixteen sisters.

Baby-Saving Campaign in Toronto.—During June, July and August, 1914, there were 200 less infant deaths in Toronto than in the same period in 1913. This fully justifies the establishment in connection with Toronto's Department of Health, of a section of child hygiene. Ten baby clinics have been at work throughout the summer, at each of which doctors and nurses have been in attendance twice a week. The attendance at these clinics doubled each month; and during the last week in September there were in attendance a total of 952. Over 2,318 babies were regularly taken for boat trips during the past summer. A pamphlet, printed in English, Italian and Hebrew—The Care of the Baby—is supplied to all mothers.

WAR NOTES

Gasoline in Berlin.—The distributing company announces that gasoline will be supplied to physicians who absolutely have to use their own cars.

English Medal Melted Up for Relief Work.—Von Behring has donated the Harben gold medal, valued at \$500, to the city of Marburg to be expended for relief work.

Fatalities Among Physicians at the Front.—German exchanges up to September 10 had listed twelve medical men killed on the firing line, including Dr. Thelen on the man-of-war *Magdeburg*, which was blown up rather than surrender, and also three medical students.

Contribution for American Red Cross Hospital in Munich.—A contribution of \$1,000 from John A. Roebeling, Bernardsville, N. J., has been received by the Red Cross to be transmitted to Ambassador Gerard in Berlin for the maintenance of an American Red Cross hospital for the care of the wounded in Munich.

British Hospital Ship Fitted Up.—The Grand Trunk Pacific steamer *Prince George* has been requisitioned by the British admiralty as a hospital ship. The dining-room has been turned into a hospital ward and equipped with operating-tables. Elevators have been installed to permit the sick and wounded to be handled with the least possible discomfort.

Internists Appointed Consultants on the German Army Medical Staff.—Up to September, only surgeons and hygien-

ists had been appointed consultants on the general medical staff of the Germany army, but then Kraus and Krehl were called to serve in the chief medical staff for the duration of the mobilization and His was made chief of staff (*Generaloberarzt*).

Hospital Ship Donated to Great Britain by Indian Rulers.—The Maharaja Scindia of Gwalior has offered to the Viceroy of India on behalf of himself and the Nizam of Hyderabad, the Begum of Bhopal, the Maharajas of Jodhpur, Rewah and Datia, the Rajas of Dhar, Sitamau, Jhabua and Sailana and other ruling chiefs of India, a hospital ship of 300 beds to be named *Loyalty*.

Quacks in the War.—In England the war seems to have stimulated quack medical vendors to make special efforts to attract public attention by way of war advertisements. In its issue of September 26, the *British Medical Journal* calls attention to the great dangers to the English army from the advice of these quacks that soldiers should treat themselves for diarrhea and various venereal complaints.

The British Red Cross Society.—The British Red Cross Society is doing adequate work in connection with the care of British troops. The unit at Boulogne has covered nearly the whole of the grounds traversed by the British in their retreat toward Paris. The society has thirty motor ambulances already on the continent and fifty more are to be sent. A hospital of 400 beds is being established at Rouen.

Free Medical Attendance for Dependents of British Soldiers.—The British government has accepted an offer from the British Medical Association and the Pharmaceutical Society of Great Britain to give free medical attendance and drugs at cost price to dependents of men serving with the colors whose circumstances justify such relief. The service will be administered through local relief committees which are now being formed in counties, boroughs and urban districts.

Character of the Wounds.—The *Berliner med. Wochenschrift* of September 14 states that the French surgeons, Delbet, Raymond, Tuffier and Doyen, have publicly commented on the mild character of the wounds among the French soldiers when vital organs are not involved, and their rapid healing. The same comment as to the mildness of the wounds and the rapid healing among the wounded is made in the official report of the German surgeon-general, referring to the wounds made by the regulation bullets. He states further that the fifth week of the war has passed without epidemics developing in the German army. The first-aid packages have proved efficient. The bandages applied at the front were still in place when the wounded were delivered to the base hospitals, and a large proportion of the wounded are already recovering and clamoring to be sent back to the front.

Prophylaxis of Epidemics in Germany.—At Königsberg in eastern Prussia every case, even suspected of being typhoid, typhus or dysentery, must now be reported to the authorities, and also every bacilli carrier. Their dwelling places as also all houses where there is a case of scarlet fever or diphtheria must be marked with a yellow lantern and a placard bearing the name of the disease. THE JOURNAL has mentioned at times the systematic campaign that has been carried on during the last decade in southwestern Prussia to stamp out typhoid fever. A series of bacteriologic stations were founded and they have sought out and tried to keep under control every bacilli carrier, and have thus materially reduced typhoid in that district. This part of the country was selected for this attempt at a campaign of extermination on the advice of Robert Koch that it might be well to have this area free from typhoid in case of another war with France.

German Patents and Trademarks in England.—The English comptroller of patents has been holding sittings concerning the question of revoking German patents and regranting them to English manufacturers. Early in the proceedings the comptroller said that the general principle by which the court would be guided, was that unless it would prove to be for the public interest, it would not recommend the spread of trade by transfer to other businesses of the device trademarks which were known to be associated with foreign firms. The object was not to confiscate anyone's property, but merely to enable business to go on, which would not be possible without the suspension of patents. Among the applications heard from various British manufacturers were one to take over the manufacture and sale of salvarsan, one to take over the manufacture and trademark of hexamethylene-tetramin as urotropin and another for the manufacture of lysol. No decisions were rendered.

PARIS LETTER

PARIS, Sept. 24, 1914.

Organization of the Sanitary Service

From the beginning of the war temporary hospitals and ambulances have naturally increased. These improvised establishments have not always been perfect. Some have had insufficient equipment and others insufficient staff. It might be preferable to have fewer ambulances but better regulated ones, especially so far as the removal of wastes and the sterilization of soiled linen is concerned.

Medical students who have defects of sight which prevent them from being useful in the army service might be utilized in the hospitals and ambulances. So also might non-military physicians whose services have been rejected by the military authorities because of their age or for other reasons. They might, however, be more useful than some of the Red Cross ladies who have no experience but who flaunt their nurses' blouses and aprons on the streets and in the restaurants.

The following note appears in the daily paper:

"Our illustrious collaborator, Paul Bourget, whose medical knowledge is well known, is putting this at the service of our wounded. Every morning he may be seen at the Clermont-Ferrand Hospital dressed for service. He is especially charged with the duty of giving chloroform to those who are undergoing surgical operations."

I believe that the professional anesthetist would be worth more here than M. Paul Bourget, whose medical knowledge has yet to be proved.

Definite Results of the Census of Paris

The census which I mentioned in my previous letter has been finished. The population now consists of 1,807,044 inhabitants, or 1,026,307 less than in 1911, and is no more than about two-thirds (63 per cent. to be exact) of what it is in normal times. There are 949,087 women against 585,486 men. There are also 278,471 children of whom 30,906 are less than 15 months old.

The Water-Supply

Fears have been expressed lest Paris might be deprived of suitable drinking-water because of the great battle which has recently occurred in the vicinity. These fears have not been realized. The measures taken have assured to the population of Paris and the suburbs sufficient potable water. The drinking-water is analyzed several times a day. If it should fail, water from the Seine and the Marne will be treated by hypochlorites for use.

Sanitation of the Battle-Field

About 1,500 firemen, under the direction of the service of military sanitation, have gone over the field of the battle of the Marne to carry out measures of sanitation intended to relieve Paris of all danger of infection.

Marriages

JAMES CASPER NEGLEY, M.D., Los Angeles, Cal., to Miss Katherine Constance Collins of New York City, at Los Angeles, recently.

EDWARD MICHAEL WILLIAMS, M.D., Norway, Iowa, to Miss Beryl Camery of Traer, Iowa, at Cedar Rapids, Iowa, September 16.

ISRAEL LEOPOLD GLUSHAK, M.D., Washington, D. C., to Miss Annie Gordon of Glasgow, Scotland, August 5.

RAYMOND WRIGHT WHITTIER, M.D., to Miss Imogene Cory, both of Mora, Minn., at Minneapolis, September 20.

HOWARD ENGLER HARMAN, M.D., Leetonia, Ohio, to Miss Grace Fanny Burger of Baltimore, Md., October 7.

ARTHUR JAMES McCARY, M.D., Chicago, to Miss Arleen Winifred Joannes of Green Bay, Wis., October 8.

JOSEPH WILEY HARRISON, M.D., to Miss Alta M. Haxton, both of Guthrie Center, Iowa., September 24.

WYMAN H. FISHER, M.D., to Miss Minnie Rosenbaum, both of Wanatah, Ind., at Chicago, September 23.

DANIEL IRWIN ALLER, M.D., Merced Falls, Cal., to Miss Merle Orr of Redding, Cal., September 23.

JAMES EDGAR YARBROUGH, M.D., to Miss Virginia Coffey, both of Erick, Okla., September 27.

CHARLES B. COWAN, M.D., to Mrs. Mary C. Morris, both of Seattle, Wash., September 19.

Deaths

Lemuel Bolton Bangs, M.D. College of Physicians and Surgeons in the City of New York, 1872; formerly a member of the American Medical Association; a Fellow of the New York Academy of Medicine; consulting surgeon to St. Luke's, Bellevue, City, St. Vincent's and Methodist Episcopal hospitals; professor of genito-urinary surgery in the University and Bellevue Hospital Medical School from 1898 to 1901; president of the American Association of Genito-Urinary Surgeons in 1895; died at his home in New York City, October 4, aged 72.

Solon Marks, M.D. Rush Medical College, 1853; for more than sixty years a practitioner of Milwaukee; one of the organizers of the American Medical Association and American Surgical Society, and for several years president of the State Medical Society of Wisconsin; division surgeon and chief surgeon of the Army of the Cumberland during the Civil War; emeritus professor of military surgery, and fractures and dislocations in the Wisconsin College of Physicians and Surgeons; died at his home in Milwaukee, September 29, aged 87.

Morris Longstreth, M.D. University of Pennsylvania, Philadelphia, 1869; Jefferson Medical College, 1876; of Cambridge, Mass.; a Fellow of the American Medical Association, American Association for the Advancement of Science and Association of American Physicians; for many years a practitioner of Philadelphia; professor of pathological anatomy in Jefferson Medical College until 1904, and a member of the attending staff of the Pennsylvania Hospital; died in Barcelona, Spain, September 19, aged 68.

Washington Emil Fischer, M.D. Washington University, St. Louis, 1871; a Fellow of the American Medical Association; clinical professor of medicine in his Alma Mater; consulting physician to Washington University Hospital, St. Luke's Hospital and St. Louis Skin and Cancer Hospital, and one of the founders and president of the medical board of the latter institution; died at his home in St. Louis, September 15, from carcinoma, aged 64.

Charles Francis Gladding, M.D. California Eclectic Medical College, Los Angeles, 1897; a Fellow of the American Medical Association; for nearly forty years a practitioner of California and once physician to the state penitentiary, Folsom; a member of the Berkeley Board of Health; died at his home in Oakland, Cal., September 15, from cerebral hemorrhage, aged 58.

Theron Augustus Wales, M.D. University of Pennsylvania, Philadelphia, 1873; a member of the Medical Society of the State of New York; one of the leading practitioners of Elmira, N. Y.; past president of the Third District Medical Society, Chemung County Medical Association and Chemung County Medical Society; for many years examining surgeon for pensions and a police commissioner; died at his home in Elmira, September 9, aged 72.

John Hale Taylor, M.D. University of Buffalo, N. Y., 1869; a Fellow of the American Medical Association; president of the Orleans County, N. Y., Medical Society in 1892; coroner of Orleans County for fifteen years and for one term president of the village of Holley, N. Y., where he had practiced for forty-five years; died at his home September 23, ten weeks after a fall in which he sustained a fracture of the hip, aged 70.

James Kossuth King, M.D. College of Physicians and Surgeons in the City of New York, 1877; a Fellow of the American Medical Association; one of the founders and for twenty years medical director of the Glen Springs Sanitarium, Watkins, N. Y.; died at his home in Watkins, September 20, from cerebral hemorrhage, aged 65.

Cornelius S. Van Etten, M.D. University of Pennsylvania, Philadelphia, 1873; a Fellow of the American Medical Association; for thirty-eight years a practitioner of Rhinebeck, N. Y., and for many years health officer of that town; died at his home in New York City, September 10, aged 68.

Jacob Trush, M.D. Washington University, St. Louis, 1865; a Fellow of the American Medical Association and of the Cincinnati Academy of Medicine; died suddenly at his home in Clifton, Cincinnati, September 11, from heart disease, aged 77.

Sam C. Pursley, M.D. Medical College of Georgia, Augusta, 1868; a Confederate veteran and a well-known physician of Jones County, Ga.; died at his home in Clinton, Ga.; September 11, aged 70.

Wilton Marcellus Mason, M.D. California Eclectic Medical College, Los Angeles, 1891; of Lodi, Cal.; a Fellow of the American Medical Association; for many years a member of the State Board of Medical Examiners; died in the Morton Hospital, San Francisco, September 19, from aneurysm of the arch of the aorta, aged 49.

Shannon P. Peck, M.D. College of Physicians and Surgeons, Baltimore, Md., 1877; a member of the West Virginia State Medical Association; twice mayor of Hinton, W. Va., and for several years chief surgeon of the Chesapeake and Ohio System; died suddenly, September 16, while driving with a friend in his motor car.

Samuel Fairbank Mellen, M.D. New York University, New York City, 1884; a member of the Medical Society of the State of New York and American Medico-Psychological Society; assistant physician to the Hudson River State Hospital, Poughkeepsie, N. Y.; died in Poughkeepsie, July 15, aged 60.

Archibald Thompson Davison, M.D. Harvard Medical School, 1871; a member of the Massachusetts Medical Society; for many years a practitioner of Dorchester, Boston, and for six years a member of the Boston school committee; died at his home in Cambridge, Mass., September 19, aged 70.

Clifton N. Infield, M.D. New York Homeopathic Medical College, New York City, 1883; of Hudson Falls, N. Y.; a member of the Medical Society of the State of New York; died in the Samaritan Hospital, Troy, N. Y., September 16, after an operation for disease of the stomach.

William Francis Byrns, M.D. Georgetown University, Washington, D. C., 1873; of Washington, D. C.; a Fellow of the American Medical Association; died suddenly at the home of his brother in Ware, Mass., September 19, aged 67.

James Neal Murdoch, M.D. University of Pennsylvania, Philadelphia, 1852; for many years a practitioner and druggist of Parkersburg, W. Va.; died at his home in that city, September 14, aged 86.

Burtus M. Keeney, M.D. Long Island College Hospital Brooklyn, N. Y., 1864; for many years a practitioner of New York City; died at his home in Waterford, Conn., September 12, aged 77.

Martin Thaddeus Joyce, M.D. College of Physicians and Surgeons, Chicago, 1903; of Waterloo, Wis.; died in a hospital in Chicago, after an operation for appendicitis, September 6, aged 38.

James Reid Hinkle, M.D. New York University, New York City, 1860; a surgeon of Indiana Volunteers during the Civil War; died at his home in Sullivan, Ind., September 15, aged 82.

Albert M. Finch (license, Indiana, 1897), of Jamestown, Ind.; died in a hotel in Crawfordville, Ind., September 9, it is believed from the effects of an overdose of a drug, aged 62.

Maude L. Dunn Erstling, M.D. National Medical University, Chicago, 1905; died at her home in Chicago, August 31, from infection following an operation, aged 44.

William H. Johnson, M.D. Medical College of Indiana, Indianapolis, 1877; a veteran of the Civil War; died at his home in Lincoln, Neb., September 5, aged 68.

William Thomas Wood, M.D. Western Pennsylvania Medical College, Pittsburgh, 1908; died at his home in Toledo, Ohio, September 9, from nephritis, aged 39.

Lawson A. Duthie, M.D. Physio-Medical College of Indiana, Indianapolis, 1900; died at his home in Indianapolis, September 12, aged 47.

William Monroe Mierley, M.D. Medico-Chirurgical College of Philadelphia, 1891; of Ottumwa, Ia.; died in that city, September 13, aged 41.

William Samuel Sanders, M.D. Missouri Medical College, St. Louis, 1875; died at his home in Clarence, Mo., September 6, aged 64.

Guy H. Hildebrand, M.D. King Eclectic Medical College, Des Moines, Ia., 1889; died at his home in Clearwater, September 7, aged 62.

Bernhard V. Lenderink (license, Michigan, 17 years of practice, 1900); died at his home in Holland, Mich., September 12, aged 77.

Manoah M. Woodward, M.D. Hospital College of Medicine, Louisville, Ky., 1885; died at his home in San Angelo, Tex., September 7.

Wilber Gray Smith, M.D. University of Maryland, Baltimore, 1880; died at his home in Oakland, Cal., August 6, aged 55.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

DUKET REDIVIVUS

A Gold Brick Consumption Cure Is Offered Las Vegas—and Declined

Peter P. Duket, the "consumption cure" faker, is at it again; this time at Las Vegas, New Mexico. As our readers will remember, Duket first exploited his fraudulent cure for tuberculosis in Findlay, Ohio. Failing there, he attempted to establish a similar business in Colorado, and doubtless would have done so had not the Board of Medical Examiners of that state protected the public against him. Then Duket came to Illinois, obtained a license and interested Bennett Medical College, and through it, William Lorimer, ex-senator and ex-banker.

THE JOURNAL investigated and exposed Duket's fraud in the early months of 1913. After spending thousands of dollars of Mr. Lorimer's money, Bennett Medical College admitted, months later, that scientific investigation of Duket's cure demonstrated its worthlessness. These findings apparently were never given the wide publicity that had been given the Duket cure itself. On April 25, 1914, THE JOURNAL gave its readers the findings of the Bennett Medical College investigators.

The Las Vegas papers for Sept. 30, 1914, contained a news-item to the effect that an open meeting of the citizens was going to be held that evening to consider a proposition made by Dr. Peter P. Duket to the Board of Directors of the Commercial Club of Las Vegas. To quote:

"According to the statement made by the doctor to the directors, he expects to erect a two-hundred-room sanitarium here in which he will treat patients with a specific cure for tuberculosis which he has discovered."

Duket was not at all modest in his requests on Las Vegas, for, according to published reports, he suggested that he be given one of the most valuable pieces of real estate in the city and that the improvements on the lot be deeded to him with the land.

The special meeting called to consider the matter was held. Duket was present and gave the audience a glowing description of the advantage to Las Vegas of having a sanatorium operated by him for the purpose of giving his marvelous cure. After Duket had said his little piece one of the Las Vegas physicians asked to be heard. He stated that he had lived in Las Vegas all his life and appreciated the advantages of that city as a suitable place for the erection of a sanatorium and that he was more than willing to do all in his power to aid the founding of any worthy institution of this sort. He suggested, however, that a sanatorium was more than merely a well-equipped building in a favorable climate. Its success and the good it might do the community must depend largely on the controlling spirit behind it. At this point, the doctor proceeded to read the record of Duket and his "cure" from the various issues of THE JOURNAL of the American Medical Association. After this, a layman told the meeting that he was one of Duket's alleged cures. He went on to say that the Duket treatment had done him no good and he told the audience of seven or eight patients whom he knew Duket had treated without benefit, three of them in fact being dead. Following these verbal bomb-shells, the chairman did not even take the trouble to put a motion that had been made, and Dr. Duket and his "cure" were given no further consideration. The Las Vegas papers state that following his failure to sell Las Vegas a "gold brick," he left for Silver City, N. M., at which place "he will endeavor to interest the people in the sanatorium proposition."

Duket is quoted as having said when he first reached the city: "The Las Vegas climate is ideal for the treatment of tuberculosis." It is; but the Las Vegas climate is evidently an unhealthy one for "consumption cure" fakers.

GLYCO-THYMOLINE

Report of the Council on Pharmacy and Chemistry

The Council, having voted that Glyco-Thymoline be refused recognition, authorized publication of the following report.

W. A. PUCKNER, Secretary.

Glyco-Thymoline is a typical example of a "patent medicine" advertised to the public through the doctors. Bottles of the mixture with the name blown in the glass are issued to physicians for distribution to patients, and the circular which comes around the bottle more or less directly recommends it for use in almost every form of infectious disease.

COMPOSITION AND VARYING FORMULAS

Different formulas for Glyco-Thymoline have appeared. At one time it was said to contain:

"Sodium 24, Boric Acid 4, Benzoin 4, Acid Salicylic 0.33, Eucalyptol 0.33, Thymoline 0.17, Betula Lenta 0.08, Menthol 0.08, Pini Pumilionis 0.17, Glycerin and solvents, q.s."

Another formula, which appeared about the same time, was:

"Benzo-Salicyl. Sod. 33.33, Eucalyptol 0.33, Thymol 0.17, Salicylate of Methyl from Betula Lenta 0.16, Pini Pumilionis 0.17, Glycerin and solvents q.s."

A later formula was like the second except that it included "Menthol. 0.08."

Analysis in the chemical laboratory of the American Medical Association showed that Glyco-Thymoline contained borax but no boric acid; sodium salicylate but no salicylic acid; sodium benzoate, but no benzoin; the compound benzo-salicyl. sod. could not be determined, but a mixture of sodium benzoate and sodium salicylate was demonstrable. Later Puckner pointed out that while such a combination as benzo-salicylate of sodium is known, it could not possibly be present in Glyco-Thymoline because the alkalinity of this mixture would decompose the compound. As the manufacturers evidently recognize that false formulas can no longer be made plausible, only vague statements as to the composition are now offered.

Two points should be noted in this connection:

1. Glyco-Thymoline conflicts with Rule 1 of the Council on Pharmacy and Chemistry, which declares that no article shall be accepted for inclusion with New and Nonofficial Remedies unless its composition be furnished.

2. No matter which published formula be accepted as correct, it is at best a weak antiseptic. The antiseptic ingredients present cannot act as germicides in the strength in which they are used, or in the alkaline solution on the unique virtues of which the circular lays so much stress ("the one antiseptic solution based on the alkalinity and saline strength of normal blood"). As shown by Verhoeff and Ellis,³ undiluted Glyco-Thymoline does not kill *Staphylococcus aureus* in four hours. It evidently, they say, "could have but little if any greater therapeutic value than sterile salt solution."

DANGEROUS RECOMMENDATIONS

In *Diphtheria*: "Case-reports" in the advertising pamphlet describe the treatment of diphtheria with Glyco-Thymoline. It is surely unnecessary to point out that, whatever the possible merits of Glyco-Thymoline or its ingredients, they are utterly irrelevant here. But let a "case-report" be quoted:

"....., M.D., states: 'I have many an interesting story of Glyco-Thymoline. I just finished up a family in which I was treating five cases of diphtheria—two of which presented diphtheritic membrane in nasal cavity. I decided not to use antitoxin in these cases. I used only the regular constitutional treatment and Glyco-Thymoline as a local antiseptic. I believe the Glyco-Thymoline

1. The Formula for Glyco-Thymoline, Pharmacology Department, THE JOURNAL A. M. A., Jan. 9, 1909, p. 147.
2. Puckner, W. A.: Rep. Chem. Lab., A. M. A., 1910, iii, 7.
3. Verhoeff, F. H., and Ellis, Edward Keith: The Bactericidal Values of Some Widely Advertised Antiseptics, THE JOURNAL A. M. A., June 29, 1907, p. 2175.

worked wonders. My cases are all now in good health, with no after troubles. I think it an ideal antiseptic for every trouble in nose and throat."

Words of denunciation fall flat before the complacent self-revelation of the physician who "decided not to use antitoxin." Surely if any other physicians have been misguided by this example, there must be many another "interesting story of Glyco-Thymoline" to tell—not to speak of other families that have been "finished up."

In *Ophthalmia Neonatorum*: We gain from the same advertising pamphlet the following information on prophylaxis:

"The treatment in the past has consisted of instillation of silver nitrate, boric acid, salts of mercury, nucleinated salts of silver and mercury, etc. . . , but these agents have proved to be failures as an absolute specific. . . . During the past few months experiments have demonstrated the efficacy of a new mode of treatment that is both rapid and thorough, and devoid of danger in its use. This method consists of thorough irrigation of the eyes in fully developed cases of the disease with a solution of Glyco-Thymoline."

At the very best, Glyco-Thymoline is a weak, a very weak antiseptic—not a germicide. To assert, or even to imply, that it is superior to the well-tried and efficacious *Crèdè* method of treatment for ophthalmia in the new-born is cruelly wicked.

In *Consumption*: This from the same pamphlet:

"The indifference of phthisical patients toward the maintenance of sanitary conditions is proverbial.

"That the environment of all such patients should be absolutely aseptic both for the good of the patient and for the welfare of those who are brought into contact with them is a well-established fact."

It is, instead, an ill-established fiction. To talk about maintaining an "absolutely aseptic" environment under any practical conditions of daily life is to talk nonsense; the thing is impossible, even were it desirable. But, not to be distracted from the main issue by subsidiary falsehoods:

"In Glyco-Thymoline we have an antiseptic which, while mild and soothing . . . is still a powerful agent for promoting a sepsis, and a potent factor in the maintenance of sanitary environment in the sick room.

"Inhaled from a vaporizer or a fine spray atomizer, it will loosen the mucus in a marvelous manner and in a wonderfully short time, shorten the paroxysms of coughing to a marked degree, at the same time reducing the danger of contagion to a minimum."

And this is the preparation, it will be remembered—this "powerful agent for promoting a sepsis"—which, when applied in undiluted strength, was unable to kill *Staphylococcus aureus* in four hours!

It would be a waste of space to cite further evidence to show that the advertising of Glyco-Thymoline is in conflict with Rule 6 of the Council, which provides that no article shall be accepted "concerning which the manufacturer or his agents make unwarranted, exaggerated or misleading statements as to the therapeutic value." It is further in conflict with Rule 4, against indirect advertising by means of the label, package or circular accompanying the package.

CLAIMS TO ORIGINALITY

Hatcher and Wilbert have pointed out that from a therapeutic point of view the composition of Glyco-Thymoline is based on the formula of the widely known "compound solution of sodium borate," or Dobell's solution. For the phenol in the original, a mixture of antiseptic acids and volatile oils has been substituted.

SUMMARY

Glyco-Thymoline is in conflict with Rules 1 and 4 of the Council on Pharmacy and Chemistry, because of its indefinite composition and the method of advertising it to the public. It is in conflict with Rules 10, 6 and 8, in that it is an unscientific, shot-gun mixture sold under unwarranted therapeutic claims and under a misleading name. Altogether it must be considered an unscientific heterogeneous mixture, in which a few valuable ingredients are hidden by the useless shrubbery which surrounds them.

WINE OF CARDUI

Still Soliciting Testimonials

To the Editor:—I wish to commend your work in exposing "patent medicine" frauds, and I am particularly interested in the "Wine of Cardui" suit. A few days since a winsome young woman from Chattanooga came through this section soliciting the profession for testimonials showing the merits of Wine of Cardui. Such "nerve" is hard to imagine. I am sorry to say—to the shame of the profession—that some of the unsuspecting who had not read *THE JOURNAL* yielded to her winsome wiles and permitted the use of their names in this connection. Later I learned that the young woman is a lawyer and that such testimonials are to be introduced as evidence in the suit of Wine of Cardui versus the A. M. A. and *THE JOURNAL*.

I am giving you this information with the hope that you will issue a warning to all Fellows to be on the *qui vive* for such persons.

Jos. L. McSPARRAN, M.D., Graham, Va.

How Tennessee Views It

Under the title "Not to Fight Them is to Help Them," the *Journal of the Tennessee State Medical Association* in its September, 1914, issue says:

"The patent medicine 'industry' has long prospered in Tennessee. Chattanooga, Paris, Winchester, Nashville and to a lesser degree, other cities and towns in the state have become more or less 'famous' on account of their 'wines,' 'tonics,' 'liniments,' 'dropsy cures' and other monstrous fakes. There are not quite as many 'medicine factories' now as once were in the state, but there are considerably more than are going to be after a while. The 'bell has rung on' the fakes and the fakers and they are going to have to move some of these fine days. The contributions of 'wine' profits to churches, 'tonic' profits to high schools, and 'soft drink' profits to church universities will not save them.

"It seems, though, that before the final fall comes that some who should know better are going to allow themselves to be soiled by patent medicine influence. We were astounded to hear one of the prominent physicians of a Tennessee city express himself as being entirely out of sympathy with the effort of *THE JOURNAL* of the A. M. A. to expose the fraudulent claims and reprehensible methods of patent medicine manufacturers. Worse than that, we are reliably informed that there are doctors in Tennessee who are unwilling to go on record as endorsing a resolution which uncompromisingly condemns 'wines' and 'tonics.' We can understand the method of reasoning by which some newspapers and 'boards of trade' arrive at the conclusion that it will not do for them to antagonize the patent medicine 'industry'; but we are completely at a loss to discover by what path of cerebration a modern physician can travel and at its end find himself unwilling to condemn—without reserve—an open-faced fake of the patent medicine variety. Men who are worthy to have M.D.—to say nothing of other combinations of distinguishing symbols which some have, or fain would have—after their names, are constitutionally opposed to misrepresentation and fraud. These are the stock in trade of the 'wine' makers, the 'tonic' mixers and the 'dropsy cure' bottlers. Not to condemn these fakes is but to uphold them. God forbid that any member of the Tennessee State Medical Association should compromise with them! God hasten the day when the whole people shall know the truth about the patent medicine frauds, so that their end shall come! And may all who stand with them, fall with them!"

Transformation of an Automobile into an Ambulance.—The *Wiener klinische Wochenschrift* takes the following from *Caducée*, xiv, 64: "At the Swiss Red Cross exercises, a 24 h.p. automobile with four seats was used as an ambulance. The two rear seats were removed and a bridge put in their place in a short time on which, with the aid of six poles and a few ropes, an inclined plane for the admission of three stretchers was set. Two poles were turned lengthwise, two crosswise and two to fasten the frame."

Correspondence

Antityphoid Inoculation

To the Editor:—The statistics given by Major Russell as to the reduction of typhoid fever in the army by the use of antityphoid inoculations in three doses at ten-day intervals have given an impetus to this vaccine work, so that thousands of persons are being inoculated throughout this country. He reports three cases occurring in ninety thousand inoculated soldiers during last year.

In a small community here in southern Kentucky, in which we have had approximately one thousand inoculations, we have had five of them develop typhoid fever within the next eighteen months.

There have been no reports in the current medical journals of such cases and I feel that these failures should be published from every source, in order that the true status of the procedure may be ascertained.

The cases are:

CASE 1.—Miss Lillian H., a pupil nurse in Jennie Stuart Memorial Hospital, inoculated in December, 1912, by Dr. Keith, developed typical typhoid fever in July, 1914, and is still in the hospital with it. The fever is of a rather severe type running to 103.6. Vaccine used—Lederle.

CASE 2.—Ray M., white, boy, aged 15, inoculated by Dr. F. P. Thomas in three ten-day intervals, August, 1912, developed typhoid fever in May, 1914, a fever of marked severity, with a relapse after his recovery. Is now rapidly gaining health. Vaccine used—National.

CASE 3.—Ben W., white, man, aged 23, inoculated June, 1913, by Dr. F. P. Thomas with three ten-day interval doses, developed typhoid fever in July, 1914, and was intensely ill for three weeks with marked stupor and delirium, and three considerable hemorrhages. He has now recovered. Vaccine used—Parke Davis & Co.

CASE 4.—L., white, schoolboy, student at Bethel College at Russellville, Ky., received three injections of typhoid vaccine from Dr. Austin Bell in September, 1913. He developed typhoid fever at his home near Howell, Ky., in July, 1914, in less than twelve months. Vaccine used—Mulford.

CASE 5.—Mr. L., a schoolteacher, was inoculated by Dr. W. W. Durham, with three injections, in the summer of 1913. He moved to North Carolina, and there contracted typhoid in the spring of 1914. Vaccine—not known.

These are bona-fide cases of typhoid fever, occurring in persons inoculated less than eighteen months before.

The question is whether these poor results are the fault of using inferior vaccines, or vaccines that have not been properly kept, or whether they go to show that the protection against typhoid by these vaccines is at best but a fleeting one, disappearing in a few months.

It seems to me that there should be some concerted action on the part of the medical profession to obtain a standard vaccine, and see that it is handled from the laboratory to the patient in a manner that will insure its efficacy.

The results of antityphoid vaccination in Christian County, Kentucky, I should say, have not been satisfactory, certainly nothing like those reported from the army. There must be a reason. If others are encountering failures in immunization, they should report their cases in order that accurate judgment may be formed of the value of this procedure.

J. G. GAITHER, M.D., Hopkinsville, Ky.

The above letter was referred to the secretary of the State Board of Health of Kentucky, who replies:

Dr. Gaither is one of our best physicians, but his report as to antityphoid inoculations in Christian County does not accord with that of the State Board of Health. Under the direction of this board 6,739 antityphoid inoculations have been made up to July 1, last. Not one case of typhoid fever has developed in them. Many of these persons were immunized during epidemics. The vaccine used in these cases has been kept in a refrigerator in the laboratory until just before using, and I think the proper care of the vaccine has con-

tributed largely to its success. The board furnishes the vaccine in three ampules at 21 cents. In the present state of rural sanitation in Kentucky, the State Board of Health feels that antityphoid inoculation should be especially recommended in every individual between the ages of 15 to 30 years at intervals of two years.

A. T. McCORMACK, Secretary,
Bowling Green, Ky.

Beans for Prevention of Pellagra

To the Editor:—Since the publication of my report to the Surgeon-General on the "Cause and Prevention of Pellagra" (*Public Health Reports*, Sept. 11, 1914) and of the editorial on "The Etiology of Pellagra" in *THE JOURNAL*, Sept. 26, 1914, I am repeatedly called on to answer substantially the following question: "Our people cannot afford fresh meat, milk and eggs, the year round; how can we, therefore, keep pellagra from recurring?" Tentatively, at least, the answer may be summed up in one word, "beans." The people of the South, especially the poor, must be taught to cook and eat at least as much of the dried (not canned) beans and peas during the winter as they do of the fresh during the summer.

For obvious reasons, I would ask you to give this the necessary space in *THE JOURNAL*.

JOSEPH GOLDBERGER, M.D., Washington, D. C.
Surgeon, U. S. P. H. S.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted on request.

BONES IN ANCIENT BURYING GROUNDS

To the Editor:—In Fielding's "Tom Jones" there is a description of a small riot in a country grave-yard in which skulls were used as missiles and long bones as clubs. While of course this is a work of fiction, I would like to inquire if ancient burying grounds actually have relics of this kind strewn about, and if so why?

A. B. C.

ANSWER.—Before the Christian era burial places were usually extramural. After the advent of Christianity the dead were buried in churches or churchyards, which, in populous cities and districts, soon became overcrowded. Vaults under the pavements of the churches were crowded with coffins and, in the churchyards, coffins were placed one above the other in the graves, almost to the level of the ground. To make room for fresh interments, it is said, sextons would sometimes slyly remove bones and other remains or transfer the contents of entire graves to adjacent pits, the grave-diggers appropriating the coffin plates, handles and nails, which were sold as waste metal. In this way the air and water-supply of churchyards and their vicinities became a source of infection, very dangerous to health, leading, in England, to the Burial Acts of 1855 and later, which closed the churchyards and created the modern suburban cemeteries of wide extent. It is of record that the first to call attention to these matters in reports of Parliamentary committees was Sir Edwin Chadwick in 1843. With these facts in mind, it is easy to see how skulls and bones might have been tossed on the surface of the ground and left there by grave-diggers, as in the "Alas, poor Yorick" scene in Hamlet. The overcrowded condition of the Christian cemeteries was in striking contrast with the cleanly Graeco-Roman process of cremation, and the vast cypress-planted cemeteries of Constantinople which are said to occupy a wider territory than that covered by the habitations of the living. The ossuaries of the Latin peoples, in which temporary graves are rented to the poor for a period, after which all the bones of their dead are hustled pell-mell into a huge open ditch or stone receptaculum, found their most striking example in the catacombs. The *fosses communes* of Paris in which as many as forty to fifty dead bodies were buried at a time seem a variant of the latter idea, which is quite common to the Spanish possessions in both hemispheres. A photograph of such an ossuary from San Juan, Porto Rico, is on exhibition in the Army Medical Museum.

In Swinburne's tragedy of "Bothwell" (Act II, Scene 2), which follows the Scotch historic documents very closely, there is a scene describing Queen Mary's escape with Darnley through the vaults of the ruined abbey of Holyrood:

"See you, my friends, what valiant hearts are here,
My lord's and mine, who hardly have crept forth,
In God's fear only, through the charnel house,
Among the bones and skulls of ancient kings,
That thought not shame to stand for stumbling stones
In their poor daughter's way, etc.]

ARTICLES ON BRILL'S DISEASE

To the Editor:—Please give references to articles on Brill's disease appearing since 1910. D. K. BRIGGS, M.D., Blackville, S. C.

ANSWER.—

- Typhus Fever, General News, *THE JOURNAL*, May 2, 1914, p. 1413.
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Patek, A. P.: Typhus Fever: Case Occurring in Milwaukee, *Wisconsin Med. Jour.*, June, 1912.
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Rabinowitsch, M.: Parasite of Exanthematous Typhus, *München. med. Wchnschr.*, Nov. 4, 1913.
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Paullin, J. E.: Typhus Fever, with Report of Cases, *South. Med. Jour.*, January, 1913; abstr., *THE JOURNAL*, Feb. 1, 1913, p. 400.
Arzt, L., and Kerl, W.: Small-Pox and Typhus in Bosnian Refugees, *Wiener klin. Wchnschr.*, May 15, 1913.
Muller, P. T.: Bacteriologic Findings in Typhus, *München. med. Wchnschr.*, June 24, 1913.
Markl: Serodiagnosis of Exanthematous Typhus, *Wiener klin. Wchnschr.*, July 24, 1913.
Hegler, C., and von Prowazek, S.: Exanthematous Typhus, *Berl. klin. Wchnschr.*, Nov. 4, 1913; abstr., *THE JOURNAL*, Dec. 13, 1913, p. 2198.
Naunyn, B.: Confusion in Our Views of Exanthematous Typhus, *Deutsch. med. Wchnschr.*, Dec. 4, 1913.
Fraenkel, E.: Exanthematous Typhus and Rose-Colored Spots, *München. med. Wchnschr.*, Jan. 13, 1914.
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POISONING FROM SUPPOSED "WILD SWEET POTATO"

To the Editor:—Have you any knowledge, or experience with *Jatropha macrorhiza* [septemfida], a small plant growing in southern Arizona, belonging to the milk spurge family, Euphorbiaceae? I have recently seen sixteen cases of poisoning among Arizona militiamen from eating the root of this plant, and I am in search of information concerning the plant, its alkaloids, if known, cases of poisoning reported, etc. In this instance the root was mistaken for "Wild Mexican Sweet Potato."

C. E. YOUNT, Prescott, Ariz.

ANSWER.—The family, Euphorbiaceae, contains a very large number of poisonous plants. In some cases the toxic principles are fixed oils, in others toxalbumins and in others still, cyanogenetic glucosides. Some species such as the castor-oil and the croton-oil plants contain both toxalbumins and poisonous fixed oils. Many species of spurge contain substances which are extremely irritant to the human skin and mucous membranes. In general, all parts of the euphorbiaceous plants are poisonous, although the constituents of the seeds, roots and rhizomes have received most attention. Apparently the presence of an alkaloid has been reported in but one species of euphorbia and this alkaloid is

not claimed to be poisonous. No chemical examination of *Jatropha macrorhiza septemfida* appears to have been reported, although it is stated to possess cathartic properties and to have been used in medicine to some extent for its purging effects. The rhizomes of a related species, *J. angustidens*, growing in Mexico, contains a glucosid which produces hydrocyanic acid on hydrolysis. Another related species is *J. curcas*, the purging nut of Barbadoes. This contains a fixed oil having chemical and therapeutic properties similar to croton oil but less active. Many cases of poisoning have been reported from eating the seeds of this plant.

PRICE OF "HANDBOOK OF THERAPY"—KEEPING QUALITY OF BLAUD'S PILLS

To the Editor:—1. What is the price of the A. M. A. "Handbook of Therapy"?

2. A firm of manufacturing chemists makes the statement that pills or tablets containing Blaud's mass soon change from ferrous carbonate to ferric oxid, thus reducing greatly their therapeutic activity. Is this a fact?

GEORGE S. GILPIN, M.D., Stoutsville, Mo.

ANSWER.—1. \$1.50.

2. In general there seems to be no reason why a Blaud pill made in accordance with the direction of the U. S. Pharmacopoeia and coated with gelatin or sugar should not keep for a long time; specimens have been known to keep at least forty years. A comparison made by the American Medical Association Chemical Laboratory between a specimen of Blaud pill purchased in the open market and a pill containing ferrous carbonate which the manufacturer claimed to be greatly superior in permanence to the ordinary Blaud pill, showed both to be in relatively good condition, thus suggesting that the ordinary market supply may compare favorably with products for which most extravagant claims are made.

WIRE TO REPLACE PLATINUM WIRE FOR BACTERIOLOGIC PURPOSES

To the Editor:—A medical friend recently referred to a note relating to the use of some alloy wire to take the place of platinum wire in the laboratory as used in inoculations for bacteriologic work. We are writing to inquire whether *THE JOURNAL* can give us the information.

V. H. BASSETT, M.D., Savannah, Ga.

ANSWER.—The wire sometimes used for this purpose is a material with a high fusing point, patented and sold under the name of "Meteor" wire. It can be obtained through surgical instrument houses; in Chicago of V. Mueller & Co.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

- ARKANSAS: Little Rock, November 10-11. Sec., Dr. W. S. Stewart, 404 Citizens Bank Bldg., Pine Bluff. Homeopathic, Little Rock, November 12. Sec., Dr. Scott C. Runnels, 900 Scott St., Little Rock. Eclectic, Little Rock, November 10-11. Sec., Dr. C. E. Laws, Ft. Smith.
- CONNECTICUT: New Haven, November 10-11. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven. Homeopathic, New Haven, November 10. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven. Eclectic, New Haven, November 10. Sec., Dr. T. S. Hodge, 19 Main St., Torrington.
- DISTRICT OF COLUMBIA: Washington, October 13-15. Sec., Dr. George C. Ober, 125 B St., S. E., Washington.
- GEORGIA: Atlanta, October 13-15. Sec., Dr. C. T. Nolan, Marietta.
- KANSAS: Topeka, October 13-15. Sec., Dr. H. A. Dykes, Lebanon.
- LOUISIANA: New Orleans, October 29-31. Sec., Dr. E. L. Leckert, New Orleans.
- MAINE: Portland, November 10-11. Sec. Dr. Frank W. Searle, 776 Congress St., Portland.
- MICHIGAN: Lansing, October 13-15. Sec., Dr. Beverley D. Harison, 504 Washington Arcade, Detroit.
- MISSISSIPPI: Jackson, October 27-28. Sec., Dr. E. H. Galloway, Jackson.
- NEBRASKA: Lincoln, November 11-12. Sec., Dr. H. B. Cummins, Seward.
- NEVADA: Carson City, November 2. Sec., Dr. S. L. Lee, Carson City.
- NEW JERSEY: Trenton, October 20-21. Sec., Dr. H. G. Norton, Trenton.
- NEW MEXICO: Santa Fe, October 12. Sec., Dr. W. E. Kaser, East Las Vegas.
- SOUTH CAROLINA: Columbia, November 9. Sec., Dr. A. Earle Boozar, 1806 Hampton St., Columbia.
- TEXAS: Waco, November 10-12. Sec., Dr. W. L. Crosthwait, Amicable Bldg., Waco.
- WEST VIRGINIA: Clarksburg, October 13. Sec., Dr. S. L. Jepson 81 Twelfth St., Wheeling.

Book Notices

THE CLARION. By Samuel Hopkins Adams. Cloth. Price, \$1.35. Pp. 417. Boston: Houghton, Mifflin Co., 1914.

The *Clarion* is a newspaper purchased by Hal Surtaine, the only son of a millionaire "patent-medicine" manufacturer, "Dr." Surtaine. It was bought when the young man was angry because the editor would not publish a retraction of charges that had appeared a few days previously against his father and his father's business. "Dr." L. André Surtaine, the opulent maker of "Certina," had in his earlier days been Andy Certain, a peripatetic quack and nostrum vender.

The son, Hal, is a college-bred man, of more than ordinary ability and of high ideals. He starts out to run his new property with honesty of purpose and without fear or favor. The problems he has to meet and the difficulties he encounters make up the story—and a stirring and strenuous story it is. The book is a wonderfully graphic pen picture of the forces that control journalism, of the unholy alliance between journalism and "business," and of the paralyzing grip of the advertiser on a free press. ". . . If the newspaper fakes its news, if it distorts facts or if it suppresses them, it is playing false with its subscribers. It is sanding its sugar and selling shoddy for all wool." This was the attitude the young owner of the *Clarion* took toward his property. But it took him some time to see that the advertising pages, no less than the news pages, carry with them a responsibility to the public. This fact, already at work on his subconsciousness, took new life when an advertisement of a "blue-sky" mining proposition, offered by an old friend of his father's, was refused. The mining shark was indignant, and pointed to some other advertising being carried in the current issue of the *Clarion*. To quote from the protests of the gentleman who wanted to advertise his Streaky Mountain mining stock:

'Why, Streaky Mountain Copy is the Holy Bible compared to what you've got here. Take a slant at this: 'Consumption Cured in Three Months.' 'Cancer Cured or Your Money Back.' Catarrh dopes, headache cures, germ killers, baby-soothers, nerve-builders—the whole stinkin' lot. Don't I know 'em! Either sugar pills that couldn't cure a belly-ache, or hell's-brew of morphin and booze. Certina ain't the worst of 'em, any more than it's the best. I may squeeze a few dollars out of easy boobs, but you, Andy Certain, you and your young whelp here, you're playin' the poor suckers for their lives. And then you're too lily-fingered to touch a mining proposition because there's a gamble in it.'

The young newspaper proprietor also got an insight into his father's business when, by accident, he was thrown in contact with his father's confidential adviser, a man who had collected testimonials for the nostrum manufacturer and who knew all that was to be known about the black details of the "patent-medicine" business. This interesting personage was in a volubly alcoholic state when the young man innocently demanded information regarding the number of bottles of his father's nostrum—"Certina"—it would take to effect a "cure." The reply he got was an eye-opener:

"A real cure couldn't make office-rent," declared the expert with conviction. "What you want in the proprietary game is a jollier. Certina's that. The booze does it. You ought to see the farmers in a no-license district lick it up. Three or four bottles will give a guy a pretty strong hunch for it. And after the sixth bottle it's all velvet to us, except the nine cents for manufacture and delivery."

Not the least interesting part of the book deals with the attempt of the commercial interests of the town in which the *Clarion* is published to handle a serious epidemic. The disease breaks out in a part of the town occupied by old ramshackle buildings and crowded with the poorest of the poor. The authorities, at the behest of the business interests of the town, try to cover up the epidemic so that "trade" shall not be injured—and with the inevitable result.

While it is all fiction, it is fiction founded on fact, and Mr. Adams is, probably, the only writer who could deal with the subject with an actual knowledge obtained by personal experience. For ten years he was a reporter and special writer on one of the leading New York newspapers, and a

member of the staff of *McClure's Magazine* when that periodical was doing its best work. But the greatest thing he ever did was the Great American Fraud articles in *Collier's*, attacking vested interests, which required that the author know his facts and have courage to present them. The former he obtained by a personal investigation that covered many months. He visited "patent-medicine" factories, got in touch with the "patent-medicine" promoters and with their duges; then he presented the data gained in language that was direct and that could not be misunderstood. In preparing the articles that appeared in book form under the title "The Health Master," he made a thorough study of public-health matters; consequently what is touched on in "The Clarion" regarding public health—as, for instance, concerning the epidemic—may be expected to be "true to life"; and the expectations will be realized on reading the book. But while "The Clarion" carries a message, it is also, and primarily, a novel—a story of love and self-sacrifice of compelling power. It is a book that grips one from the start, and it should prove to be one of the "best sellers" of the year. It is a book that will appeal to physicians especially.

A TEXT-BOOK OF PHYSIOLOGY FOR MEDICAL STUDENTS AND PHYSICIANS. By William H. Howell, Ph.D., M.D., Sc.D., M.P., Professor of Physiology in the Johns Hopkins University. Fifth Edition. Cloth. Price, \$4 net. Pp. 1020, with 306 illustrations. Philadelphia: W. B. Saunders Co., 1913.

This embodies all the good features of the earlier editions together with valuable additions of those recent contributions in physiologic research which are a distinct and lasting advance in our knowledge of physiology. The work of Tashiro on the metabolism of nerve fibers; of Cannon, Washburn and Carlson on the mechanism of hunger, and of Harvey and Bensley on the probable origin of the free acid in the gastric secretion have received the recognition which they deserve. The chapter on the "History of Protein Food" has been rewritten. Denis' and Folin's contributions have been added to this chapter and the question of the protein minimum discussed from the point of view of the nutritive value of different proteins in growth and maintenance. There are three reasons why this book can be highly recommended: Unlike many text-books of physiology it is up to date and is kept so by the author. In addition, the book contains the most important bibliography pertaining to the subject under discussion. Finally, it is written with a clarity of expression which makes the reading of the book a pleasure.

SURGERY OF THE VASCULAR SYSTEM. By Bertram M. Bernheim, A.B., M.D., Instructor in Surgery, the Johns Hopkins University. Cloth. Price, \$3. Pp. 104, with 53 illustrations. Philadelphia: J. B. Lippincott Company, 1913.

This little volume may be divided into two parts, the first dealing with the technic of operations on the blood-vessel and the second dealing with the clinical side of the subject. The technic of the operations has been materially simplified in the past two or three years, by eliminating everything except the essentials, and these have been made as simple as possible. The technic is clearly described and well illustrated by excellent drawings. The second part is limited practically to statistics of operations on aneurysms, the statistics being condensed from the work of Monod and Vanvert. To one unfamiliar with the technic of operations on blood-vessels the work will be very valuable.

TASCHENBUCH DER AUGENHEILKUNDE FÜR AERZTE UND STUDIERENDE. Von Dr. Curt Adam, Direktor der Kaiserin Friedrich-Häuser für das Aertzliche Fortbildungswesen. Third Edition. Cloth. Price, \$2. Pp. 395, with 80 illustrations. New York: Reiman Company, 1914.

An interesting chapter of this compend is the one devoted to prescriptions for all eye conditions. It comprises 185 different formulas and completely covers the ground of ophthalmic therapeutics. Of rather timely importance is the section devoted to the requirements for entrance into the German and Austrian armies. While the book is but another addition to the rather large list of condensed treatises on the eye, it is, on the whole, a very creditable pocket work on ophthalmology, being complete in a concise and concentrated form.

Miscellany

Providing Occupation for Tuberculous Patients

In the *California State Journal of Medicine* for August, Philip King Brown describes the work of Arequipa Sanatorium, a place where tuberculous working girls can be cared for at a cost within their means, but with no element of charity. The death-rate from tuberculosis among the 40,000 working girls of San Francisco is said to be twice as high as among men. Since it was found that women had far less opportunity to recover from tuberculosis than men, most healthful outdoor occupations being closed to them, and since it had been found unsatisfactory to mix the sexes, it was decided to limit the work to women. The intention is to receive only early cases. Such patients are charged \$1 a day; and this rate has so far covered the running expenses of the institution. Patients obliged to remain continuously in bed are charged \$1.50 a day; but the aim is to avoid receiving such patients. It has been found that third-stage cases in the working classes rarely attain complete recovery; that is, the patients seldom become active factors in the industrial world again. The sanatorium is intended primarily for patients who, after being helped toward recovery and taught how to live, may go back to work without danger of relapse. Patients in the third stage, therefore, are received only when they have shown decided gains and are ready to attempt work.

Many occupations otherwise suitable for convalescents are ruled out in connection with tuberculous patients because the product cannot be sterilized without risk of being ruined. The form of craft chosen here is pottery. No patient is obliged to go to the pottery, and no one is allowed to go who is coughing or who within a week has had a temperature as high as 99 F. When the girls wish to work in the pottery they are allowed to begin on one hour a day at something that requires little effort. The working hours are gradually increased to two or three a day. No one works more than five hours a day, and no work is done Saturday or Sunday. Frequently no gain has been made until the patient began to work; and no girl has had to give up work because of any ill effects. The girls teach each other, so that supervision of the work is reduced to a minimum. In some instances considerable artistic ability has been revealed.

The girls are not paid until their work acquires some actual value, which may not be until a week after beginning. Very few patients have been able to earn their entire support at the sanatorium, but some girls have earned as much as \$15 a week for the twenty-five hours of work accomplished before their departure, and as high as \$1.15 for a few hours has been earned within a few weeks of beginning the work. The pottery has at times more than cleared expenses; it is hoped, by increasing sales through advertising, to wipe out a present deficit which is being met by friends.

It has been evident from experience that at least one-third of the patients must be helped financially to remain under care as long as it is needed. Employers, the Associated Charities of San Francisco, fraternal and social organizations and private individuals have aided, so that no girl has been compelled to leave for lack of means. It is felt, however, that it will be impossible to meet expenses for the future unless the work is confined to girls so little handicapped by the disease that they can go to work in the pottery soon after arrival, or unless a number of endowed beds are furnished. Brown feels that the most profitable field for extended efforts is educational work along health lines among San Francisco working girls.

Color Test for Serodiagnosis of Syphilis

Landau's technic is simple and seems to be proving quite reliable. All that is needed is a 1 per cent. solution of iodine in methanetetracloride, a clear fluid of constant chemical composition. To 0.2 c.c. of the serum is added 0.01 c.c. of the iodine reagent; they are well mixed and then set aside for

four hours at room temperature. The fluid is then a clear, transparent yellow if the serum came from a syphilitic; with normal serum the fluid looks a whitish gray and is opaque. Landau at first used iodized petrolatum for the test, 0.025 c.c. iodine in 50 c.c. of white petrolatum. To 0.2 c.c. of the serum was added 2.5 c.c. of this reagent and the test-tube set aside in a dark place for from five to fifteen hours. Syphilitic serum decolors the mixture while the color persists a reddish yellow with normal serum. With this technic he obtained positive reactions more constantly than with the Wassermann test in ninety syphilitics and thirty-two normal controls as he reported in his first communication in the *Wien. klin. Wchnschr.*, 1913, xxvi, 1702. With the methanetetracloride the findings are proving even more reliable.

Methods of Artificial Respiration

The recommendations of the Committee on Resuscitation from Mine Gases, whose report is published by the federal Bureau of Mines as Technical Paper 77, with regard to methods of artificial respiration, are the following:

"In all cases of suspended or inadequate respiration, as in very slow breathing, the method of artificial respiration which can be most quickly applied should be used at once. In most cases, where good air is present, manual methods of artificial respiration are most immediately useful. Of those the modified prone-pressure method . . . is best. If there is on the victim a local wound that the prone-pressure method may seriously increase, the Silvester method, in which other parts of the body are moved, may be substituted.

"In cases of carbon-monoxide poisoning, oxygen should be given instead of air. If the victim is breathing at approximately the normal rate, oxygen may be given very simply by fastening to the face of the victim a mask supplied with straps to hold it in place, fitted with an outlet valve opening to the air, and also fitted with a tube having an inlet valve and connected with a breathing-bag. Such masks are on the market. The breathing-bag is kept provided with oxygen from a cylinder. If the victim is breathing slowly or irregularly, or has ceased breathing, he should be given the oxygen, in the absence of other means, by a manual method of artificial respiration, preferably the prone-pressure method.

"Of mechanical devices for artificial respiration, the committee has examined the pulmotor and the Dr. Brat apparatus, and disapproves of them, because repeated suction of air from the lungs is not physiologic, and if continued is likely to result in injury to the lungs and inadequate inflation; and disapproves of the pulmotor also because the automatic mechanism is so readily disturbed as to be a frail dependence at critical moments.

"The committee recommends the apparatus devised by Dr. Meltzer because of its certain action, its freedom from sucking in expiration and its lightness, cheapness and simplicity. And the committee suggests that in cases of suspended or insufficient breathing the modified prone-pressure method be supplemented as soon as possible by the use of this apparatus."

Surgery and Malaria

A. Lara N reports in the August *Revista medica de Yucatan* an instructive case in which a man died a few hours after an operation for chronic appendicitis. He had been in the hospital for several days and was given tonics, as he seemed rather debilitated and had developed grippal bronchitis. After this had subsided, the appendix was removed under chloroform and ether, preceded by a little morphine and atropine. The temperature ran up during the simple operation and was 108 F. as the last suture was taken, and the patient collapsed and died in half an hour. The high temperature had evidently induced fatal congestion in the brain, and examination of the blood revealed the crescent parasites of pernicious malaria in the stage of sexual evolution. The unsuspected latent pernicious malaria had evidently been aroused by the anesthetic, and a paroxysm developed coinciding with the operation, the attack of pernicious malaria in the comatous form proving speedily fatal.

Medicolegal

Practicing "Suggestive Therapeutics" Without a Certificate—Constitutionality of Statute

(*State vs. Pratt (Wash.)*, 141 Pac. R. 318)

The Supreme Court of Washington affirms a conviction of the defendant of practicing a mode of treating the sick, known as suggestive therapeutics, without having a certificate from the state medical board. The court says that suggestive therapeutics, as practiced by the defendant, consists of a laying on of hands on that part of the body where the trouble is, and, quoting from his testimony, "on certain parts of the spine that control this—these nerves, or the nerves that control the organ; and I give certain suggestions which go from my mind to the mind of the patient, and the mind of the patient controls his own body. That is the way the cure is performed." The claim was also made that by this laying on of hands, certain "vibrations" were sent through the body and were instrumental in effecting the cure. That the mind exercises a powerful and oftentimes controlling influence on the body cannot be denied, and the court is offering no criticism on the defendant's methods. It is concerned only with the fact that it is a mode of treating the sick, and as such can be practiced only after obtaining the proper certificate from the state medical board. No doubt suggests itself to the court but that the facts were sufficient to sustain the conviction.

The defendant's brief was devoted to an argument seeking to establish the unconstitutionality of the law under which the complaint was made and conviction had. It attacked especially the provision included in the words, "or any other system or mode of treating the sick or afflicted," where the law reads: "Any person who shall practice or attempt to practice, or hold himself out as practicing medicine and surgery, osteopathy, or any other system or mode of treating the sick or afflicted in this state, without having, at the time of so doing, a valid, unrevoked certificate as provided in this chapter, shall be guilty of a misdemeanor. . . ." The argument was that such provision denies to those persons engaged in the practice of any system or mode of treatment not embraced within the terms "medicine," "surgery," and "osteopathy," as mentioned therein, the equal protection of the law, in establishing an arbitrary classification and denying to those not within such classification the right to engage in a lawful occupation. The court found the argument of counsel in support of his contention interesting, and read it with much care. It was the same argument, however, made by the defendant in *State vs. Greiner*, 63 Wash., 46, 114 Pac., 897, in contending that one who followed the method of treatment of the sick known as chiropractic was not within the prohibition of the law, and the method itself not subject to legislative control. The court there said that none of the objections then raised was well founded. On the same reasoning, it expresses the same opinion as to the objections raised by this defendant.

It was also suggested that the section above quoted must be construed with that one which reads: "Nor shall this chapter be construed to discriminate against any particular school of medicine or surgery or osteopathy or any system or mode of treating the sick or afflicted, or to interfere in any way with the practice of religion: Provided, that nothing herein shall be held to apply or to regulate any kind of treatment by prayer." Suggestive therapeutics, however, as shown by the record before the court, is not the practice of any religious belief, nor is it "any kind of treatment by prayer."

Power of School Boards to Require Physical Records of Pupils by Physicians

(*Streich vs. Board of Education of Independent School District of City of Aberdeen et al. (S. D.)*, 147 N. W. R. 779)

The Supreme Court of South Dakota affirms a judgment in favor of the respondents in this case, in which the sole question presented was their right to require of the children seeking admission into the schools under their charge, and

as a condition to their admission, the furnishing of a prescribed physical report either by some regularly licensed physician of their own selection and at their own expense, or by a physician furnished by the board at the expense of the school district. The physical-record cards provided for the purpose required information as to history of contagious diseases, heart, lungs, throat, tonsils, skin diseases, spine, teeth needing attention, abscesses in mouth, irregular teeth, recommendations, results.

The court says that many cases were cited in which it has been held that it is beyond the power of a school board to require pupils to be vaccinated as a condition precedent to attending schools, but such decisions had no application to the question here. It is one thing to say that requiring a report from which the board may learn the physical condition of a child is a reasonable exercise of police power, and quite another thing to say that a rule prescribing a certain method of medical treatment is a reasonable exercise of the police power; and yet this court has held that, under certain conditions, the requiring that pupils be vaccinated is a reasonable exercise of the police power. By so holding, this court recognized that to the school board there is delegated the right to exercise such police power as is reasonably necessary in carrying out the duties imposed on it.

Was the information sought such as would tend to promote the welfare of the child himself in his school-work, as well as to promote the well-being of the school as a whole? Can it be successfully contended that because the statute has intrusted to some particular board the general supervision of matters pertaining to the health of the people, that by implication they have forbidden school boards from bringing about such results as were stipulated to have followed the adoption of the regulation in this case, when it can be done by requiring reports such as the one before the court? The information sought would necessarily tend to aid in giving to the children the greatest benefit possible in pursuing the additional courses in physical culture, athletic exercises and vocal culture provided for them, though the court does not wish to intimate at this time its views with regard to the power of the board to require pupils to pursue studies not prescribed by statute, because that question was not at issue. Nor does the court give weight to the contention that the examination called for might result in such mental suggestion of diseases as might result in mental disease germs. Neither did the case present any religious question.

Was the source from which the information was required a proper one from which to seek same? It is evident that this information, to be entitled to due consideration, should come from some one having expert knowledge of the matters referred to; it could not be furnished by the parent or the teacher. It is true that much of it could be as well furnished by a competent dentist, but there was some which he could not furnish, and it all could be furnished by a competent physician. Moreover, such an examination as called for could not subject a child to anything not in perfect harmony with the conventions of to-day, could not subject it to indignity, and would be reasonable.

Tracings and Photographic Evidence Admissible to Show Physical Condition

(*M., K. & T. Ry. Co. of Texas vs. Heacker (Tex.)*, 168 S. W. R. 26)

The Court of Civil Appeals of Texas says that in this personal injury a tracing of plaintiff Heacker's pulse was admitted in evidence, it being conceded by all the physicians examined on the subject at the trial that the instrument by which the tracing was made was accurate and that the tracing indicated a very weak heart. There was also admitted in evidence, in illustration or demonstration of the condition of the eyes, a tracing made by the perimeter. Again, a microscopic photograph of the plaintiff's urine was admitted in evidence, the photograph having been scientifically and correctly taken and disclosing tube casts or crystals in the urine, indicating an inflamed and serious condition of the kidneys. The court holds that there was no error in the admission of any of this evidence.

Society Proceedings

COMING MEETINGS

Amer. Academy of Ophthal. and Oto-Laryn., Boston, Oct. 19-21.
Amer. Assn. for Study and Prevention of Inf. Mortal., Boston, Nov. 12.
American Association of Railway Surgeons, Chicago, Oct. 14-16.
Delaware State Medical Society, Wilmington, Oct. 13-14.
Medical Society of Hawaii, Honolulu, Nov. 28-30.
Mississippi Valley Med. Assn., Cincinnati, Oct. 27-29.
Nevada State Medical Association, Reno, Oct. 13-15.
Southern Medical Association, Richmond, Nov. 9-11.
Virginia Medical Society, Washington, D. C., Oct. 27-30.

AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS

Twenty-Seventh Annual Meeting, Held at Buffalo, Sept. 15-17, 1914

The President, DR. CHARLES N. SMITH, Toledo, Ohio in the Chair

Officers

The following officers were elected for the ensuing year: president, Dr. Charles L. Bonifield, Cincinnati; vice-presidents, Dr. Asa B. Davis, New York, and Dr. K. I. Sanes, Pittsburgh; secretary, Dr. E. Gustav Zinke, Cincinnati; treasurer, Dr. Herman E. Hayd, Buffalo.

Pittsburgh was selected as the next place of meeting.

Necessity of Constantly Looking for Cancer of Uterus

DR. J. CARSTENS, Detroit: Every case in which curetting is done should be examined. In every case of trachelorrhaphy, the tissue removed should be examined for cancer. The age of the patient does not matter.

DISCUSSION

DR. JULIUS H. JACOBSON, Toledo, Ohio: If we can impress nurses in the training schools with the importance of the early recognition of cancer, we can do more good in informing women of its early signs than by any other plan we may adopt.

DR. CHANNING W. BARRETT, Chicago: I would not be inclined to lay as little stress as the essayist does on irritation as an etiologic factor in the causation of cancer. We shall probably find out some time that there is another cause, a parasitic cause.

DR. GORDON K. DICKINSON, Jersey City: Dr. Deaver and I stand alone in exploiting the value of diagnostic hysterotomy. Dr. Carstens speaks of the pathologist finding cancer cells and making a diagnosis. How many times have we trusted our pathologists who send a report back "No cancer," and afterward we discover carcinoma? We should make a diagnosis early, and I do not see any reason why when clinical and pathologic proof is wanting, we should not bring the fundus down into the vagina, split it, examine the interior of the uterus, and remove a piece, if necessary, instead of relying on the curettings.

DR. CHARLES L. BONIFIELD, Cincinnati: I do not think it is wise to keep on harping to the laity about the early symptoms of cancer, because they cannot make the diagnosis, but what is necessary is to teach married women who have had children the necessity of going to a gynecologist occasionally to be examined, just as they go to a dentist to see if their teeth are sound or decayed. If it is worth while to pay money to save teeth, it is certainly worth while to have some competent man determine whether or not a woman is suffering from cancer.

DR. J. H. CARSTENS, Detroit: Irritation does not produce cancer. It never has and never will. If by coincidence there is a place that is irritated and cancer develops, there is some other place where cancer develops where irritation does not exist. Persons who wear glasses irritate the skin of their noses; their noses are pinched, yet I challenge anybody to show me a single case of cancer having started there from such irritation.

Renal Damage from Calculi

DR. HENRY D. FURNESS, New York: Undoubtedly the calculus in each case is present much longer than the symptoms, yet the average duration of symptoms in my forty cases was four years,—the minimum being one month and the longest eighteen years. Frequently complete destruction of a kidney occurs with very little discomfort or interference with the general health. Multiplicity of stones was found in fifteen cases, though in only two were both sides affected. I regard the so-called reflex pain as very rare. Stones unless multiple or very large, situated in the calices, in the absence of infection, or the opening of a blood vessel by attrition, cause little discomfort and little damage. The size and location in these quiescent cases should be determined by frequent roentgenograms, and when the stone remains favorably situated and does not enlarge, a waiting policy should be the one used. When very large, pressure atrophy of the renal parenchyma occurs. When a stone enters the pelvis of the kidney, then obstruction is liable to occur, and with the consequent retention, infection will sooner or later develop. The rougher the stone and the greater the retention, the greater the liability of infection, so the more urgent need of operation.

Ureteral calculi that are small, smooth, do not completely obstruct, move downward constantly and are passed in a relatively short time, do only temporary damage. Those that are fixed, or obstruct seriously the outflow of urine, soon lead to irreparable damage, especially if infection takes place. Stones in the pelvis that ball-valve it, and ureteral calculi, as a rule, cause much more suffering and greater renal damage, than stones located in the calices, especially when on the retention, infection supervenes. Ureteral calculi often become embedded in the ureteral wall, and after operation, stricture of the ureter is very apt to occur, and cause further damage of the kidney. The effect of calculi on the kidney is dependent mostly on the obstruction that is produced, and is added to by infection, which was present in 68 per cent. of my cases. There were nine cases of pyelitis and pyelonephrosis, five of pyonephrosis, and five of infected hydronephrosis. In seventeen cases the function of the involved kidney as compared with its fellow was determined, and in only two was it normal; in four the loss of function was moderate, in three great, and in eight complete. This analysis shows that in practically 50 per cent. there was damage to the renal function, and that in 35 per cent. it was completely destroyed. These numbers fall short of showing the real condition, for in fifteen cases, nearly 50 per cent. of the total, no determination of function was made. Of the thirty-two cases, the calculi produced no injury in thirteen, in nine there was pyelitis and pyelonephritis, in five pyonephrosis, and five infected hydronephrosis. In the pyonephrosis cases and the infected hydronephrosis with great loss of function, nephrectomy is advisable.

In the ureteral cases with great loss of function, it is debatable whether the removal of the stone, or the kidney, is advisable. My own opinion is that better results are obtained by removing the kidney than the stone, and that the best results come from removing the kidney and ureter to a point below the stone.

DISCUSSION

DR. CHARLES L. BONIFIELD, Cincinnati: I remember distinctly a case in which I operated two years ago. The patient went to one of my colleagues two or three years previously, and had the kidney explored and needed; but the conclusion was reached that there was no calculus. In the meantime the Roentgen ray showed a calculus. It was easily removed. It is important to employ roentgenoscopy in all these cases early.

DR. FRANCIS REDER, St. Louis: In one case I cut down on a kidney following a roentgenogram which located the stone in the lower pole. At the operation it was found that the stone was an inch and a half in the ureter. In some way the kidney was displaced and the shadow showed through the kidney and gave the impression that the stone was located in the lower pole of the kidney.

DR. E. GUSTAVE ZINKE, Cincinnati: A man, aged 54, did not pass so much urine as usual, and occasionally he had a dull pain in his back. Examination of the urine revealed a slight trace of pus. The roentgenogram showed a stone about the size of a rooster's head on the right side, with a stone about the size of a cherry on the left side, which gave him little or no trouble. At operation on the kidney with a large stone, the kidney was easily found, exposed, and incised its full length to remove the stone. There was apparently no evidence of destruction of the kidney tissue, and as the man had a stone on the other side I concluded not to remove the kidney. I sewed it up and fixed it in the usual way. The man did well for one week, and then suddenly began to get worse. He died of exhaustion at the end of two weeks.

DR. JOHN F. ERDMANN, New York: In one case the roentgenogram showed a large stone on the right side and a large shadow on the left side. The patient had a high temperature with all the evidences of sepsis. I removed a large hypernephroma from the left side but did not operate on the kidney containing the stone. Notwithstanding the man's urine was badly infected he has recovered. I hope later, if the man turns up, to do a nephrostomy and remove the stone from the right kidney.

Anastomosis of the Gall-Bladder to the Stomach: "Cholecystogastrostomy"

DR. JULIUS H. JACOBSON, Toledo, Ohio: The operation of cystogastrostomy has the same indication as that for cholecystenterostomy. The presence of bile in the stomach after cystogastrostomy does not interfere with digestion or cause the patient any inconvenience. The operation is very easy to perform; therefore, it offers a palliation and prolongation of life in a class of cases which as a rule are considered inoperable. On account of the small danger of ascending infection it should be the choice of methods when it is necessary to anastomose the gall-bladder to the alimentary tract.

Torsion of Ovarian Cysts

DR. K. I. SANES, Pittsburgh: Recognizing the dangers of torsion, we should adopt only one line of treatment, and that is ovariectomy. Pregnancy should not be considered a contra-indication to the operation. In a case of torsion of ovarian cysts and one with torsion of the right tube and ovary during the fourth month of pregnancy the patients went to full term and were delivered of living children about five months after the operation. In cases of impaction of a twisted cyst in the pelvis, the vaginal route may be preferable. The good result of the vaginal ovariectomy in one of my cases shows that in favorable instances it can safely be used. There was no death in my ten cases.

DISCUSSION

DR. CHANNING W. BARRETT, Chicago: The question as to how to deal with an ovarian cyst and yet save the ovary is an important one. In a series of cases collected, the frequency of abortion following operation is almost in direct proportion to the trauma done beforehand. The further question that was brought out in this series was what to do with an ovarian cyst that was double, there being a rather common notion that if both ovaries are removed abortion will take place. Abortion did not occur in the series of double removal of the ovaries, but seldom in a single removal and that is easily accounted for by the extra manipulation of taking out the two ovarian tumors rather than one.

DR. ALBERT GOLDSPOHN, Chicago: If we inspect the outer part of the cyst wall near its pedicle, frequently we will see macroscopic evidences of graafian follicles, and I have repeatedly dissected out that outer layer, carefully ligated vessels, without compromising the main pedicle, and folded the flap up and stitched it, and menstruation has continued.

DR. HUGO O. PANTZER, Indianapolis: I have had fourteen cases of torsion of ovarian cysts in fourteen consecutive months, and then none in two years plus.

Delayed Union in Non-Infected Epigastric Wounds

DR. MILES F. PORTER, Fort Wayne, Ind.: The evidence on which rests the opinion that delayed union is more liable

to occur in wounds in or near the midline above the umbilicus than in similar wounds below the umbilicus is quite strong. Neither the suture material nor the method of suturing can be blamed in all cases. The causes are many. Of special importance is the general condition of the patient. By using non-absorbable suture material, and allowing the sutures to remain *in situ* for two weeks or more, one may avoid serious accidents from delayed union; but one cannot in this way always secure prompt union. Incisions through the recti muscle unite more promptly than incisions through the white line. The results of delayed or imperfect union are immediate and remote. The immediate result is protrusion or exposure of the viscera, and the remote result is hernia and rarely rupture of the scar. Lack of union is usually symptomless and is usually discovered when the wound is dressed. In some cases the moisture of the dressing leads to an example which reveals the condition. As a rule, the prognosis is good. The proper closure of wounds may not secure prompt union, but will prevent serious accidents from delayed union.

DISCUSSION

DR. GEORGE VAN AMBER BROWN, Detroit: I have had three cases similar to those described by Dr. Porter. The first occurred about ten years ago in a young woman from whom I had removed a large cystic ovary and did the so-called Gilliam operation. She left the hospital in fifteen days. Two or three days after her return home I was called and found that the wound had separated down to the peritoneum. There was no suppuration. It was filled with one blood-clot. A culture was made and staphylococcus infection was found. The patient was taken to the hospital and the peritoneum was closed with catgut and a layer of gauze placed between the peritoneum and the muscle for drainage and the muscle sheath closed with catgut, and then she made an uneventful recovery.

DR. LEWIS F. SMEAD, Toledo, Ohio: I have had two cases of delayed union above the umbilicus. The first was a case of pyloric obstruction due to ulcer in which the Finney pyloroplasty was done. It was a right rectal incision. The wound was closed with fine silk in the peritoneum, the muscle and fascia with heavy silk, and running silk in the fascia; the through-and-through muscle and fascia stitches going back $\frac{3}{4}$ inch and tied over a running stitch, the skin being closed by subcutaneous silver wire. At the end of ten days the silver wire was removed and the wound was apparently clean. In the afternoon the wound opened completely from end to end. It was closed immediately, but the woman died on the seventeenth day from peritonitis.

DR. ASA B. DAVIS, New York: We have seen five or six cases of separation of the wound after cesarean section in the Lying-In Hospital. The wound was not infected apparently, but by closing it again with through-and-through silk-worm-gut sutures, there was strong union and no complications. In one or two cases the wound had been infected and opened part way down and had been allowed to heal by granulation. In these cases hernia developed, while in the other cases it did not. It is a rare thing to see in connection with cesarean operations.

DR. HUGO O. PANTZER, Indianapolis: I operated on a patient in the relatively well period of pernicious anemia. Within three days after operation there was not found a vestige of any absorbent suture material, and I used chromic gut of the heavy type through the fascia.

DR. FRANK D. GRAY, Jersey City: The only instance of separation of the abdominal wound which I can remember in the course of five years or more was a laparotomy done for resection of the intestine following a bullet wound, making six or seven openings in the intestine, which I resected and united by the modified Maunsell method, and the man made an uninterrupted recovery. For a week there were no evidences of sepsis. At the end of that time he sat up, was put in a roller chair, and on his own responsibility went rolling around the ward. He went back to bed, had partial syncope and vomited. The wound separated. It was closed again, and he made an uneventful recovery with perfect union.

DR. WILLIAM H. HUMISTON, Cleveland: I do not see why we should have more difficulty with incisions made in the epigastric region than in those made below the umbilicus. The question arises whether the technic might not be at fault in the majority of cases. It is better to go through the muscle to the right of the median line and be very careful not to strip the fascia from the muscle. If the incision is clean and the muscles are separated carefully, and the posterior fascia is divided carefully, I do not see why there should be separation of the wound. In the majority of cases where separation occurs the muscle sutures are drawn too tight.

(To be continued)

AMERICAN ROENTGEN RAY SOCIETY

Fifteenth Annual Meeting, held in Cleveland, O., Sept. 9-12, 1914

(Continued from page 1229)

The Treatment of Cancer by Physical Methods, with and without Surgery

DR. ARTHUR F. HOLDING, New York City: Incipient surface cancers can be cured, (a) if *superficial*, by physical methods; (b) if *deep*, by physical methods and surgery. The physical methods employed include massive Roentgen-ray doses, desiccation (Clark), fulguration (De Keating-Hart), diathermy (Nagelschmidt) and radium. Beginning cancer of the gastro-intestinal tract can be diagnosed with accuracy by recently improved roentgen-ray methods. Advanced cancer either internal or external cannot be cured. The successes herein reported are due, not to the discovery of any one new factor, but rather to the combined application of the best and most efficient electrophysical technic, both in early diagnosis and prompt treatment, the results of which, if permanent, are invaluable. The methods herein advocated are very costly. If this work is to be continued, sufficient money must be raised to carry it on. This means, for institutions, proper endowment; for individuals, the establishment of adequate fees.

Treatment of Chronic Roentgen Dermatitis

DR. E. W. CALDWELL, New York City: For all chronic Roentgen-ray lesions while they are strictly cutaneous, radium treatment is the most practical, because the easiest to apply, and especially because of its comparative freedom from pain. The effectiveness of the freezing methods and of the electric-spark methods cannot be questioned, but they are both painful. Sparks can sometimes be applied in situations impossible to reach with liquid air or carbon-dioxid snow. Of the two methods, freezing is somewhat less painful. The value of surgery in such cases has been demonstrated by Dr. Porter beyond any shadow of doubt, but it is my impression that these operations are dangerous and that they call for surgical judgment and technical skill of a degree which is very rare. Under the best conditions excision cannot be safely done without sacrificing some useful healthy tissue. The possibility of hastening metastasis must always be considered, and when this has occurred there is little to hope from any known treatment.

Treatment of Acute Roentgen-Ray Dermatitis

DR. W. J. DOBB, Boston: Two or three years ago this paper would have been unnecessary; to-day, I am afraid it is. Powerful apparatus is being installed in many small hospitals, as well as in private laboratories. Untrained and unqualified men may be put in charge. If this be the case, sad results may follow and much harm be done. Occasionally we are going to get reactions in certain cases when Roentgen therapy is applied, and it is to this class I particularly suggest this exceedingly simple and absolutely efficacious remedy, white wash.

	gm. or c.c.	
R. Zinci oxidi	30	5 i
Phenolis	2	or 5 ss
Glycerini	4	5 i
Aquae calcis	240	3 viii

Shake well and bathe area for five to ten minutes, twice or three times a day. Avoid all heavy dressings and, when possible, expose the lesion to the air. Do not apply this remedy on a dressing, and allow to remain for five to ten minutes, but sap it on and let the air get to the lesion. Under no conditions use an ointment.

SYMPOSIUM ON ROENTGEN THERAPY

Technic in Deep Roentgen Therapy

DR. GEORGE E. FRAHLER, Philadelphia: Since we now have outfits capable of giving almost a uniform output under definite circumstances, it is only necessary to know the value of each factor in order to reproduce at will the quality and quantity of the rays needed for any definite result. I found that the denser portions of the body, especially the liver, absorbed considerably more rays than an equal thickness of water. The liver absorbs twice as much. Only about one-fiftieth of the rays which are filtered through 3 mm. of aluminum, corresponding to 6 or 7 Benoist in penetration value, will pass through 3 inches of meat. Therefore, to obtain the equivalent of an erythema dose at 3 inches in depth, we must cross-fire at this point fifty times. We can give from 20 to 30 x on the surface, which will reduce correspondingly the number of areas through which we must treat. The absorptive value of aluminum filters does not correspond progressively with the number of millimeters used. The first millimeter absorbs nearly as much as the next two. The rays below 8 are relatively almost valueless in effect 3 inches in depth. The value of the ray at this depth is not much reduced by any number of millimeters of aluminum up to 7. The secondary radiation in an adjoining room is a very decided factor to be reckoned with in connection with photographic work, and especially in regard to personal protection.

Radium as an Aid to Roentgen Therapy

DR. RUSSELL H. BOGGS, Pittsburgh: Radium and Roentgen rays have certain differences, but each contains certain rays which are analogous. The action of radium and mesothorium is the same. I believe that the penetration method of filtration and accessibility of application rather than the agent employed determines the results. When treating with radium, authorities advise to use filters which allow lower rays to pass. The reaction produced on tissue by radium is very similar to that produced by the Roentgen ray. The endothelium of the blood-vessels is more sensitive to radium than to the Roentgen ray. A dermatitis of the same degree heals more quickly when produced by radium than by the Roentgen ray. All types of epithelioma of the skin can be treated equally well with the Roentgen ray as with radium, but when the epithelioma is situated in a cavity it is more accessible to radium. In carcinoma of the breast I believe the Roentgen ray is to be preferred. In carcinoma of the uterus, as a prophylactic measure, and in inoperable carcinoma of the rectum, I have been using mesothorium locally and the Roentgen ray by the cross-fire method externally. Results have been gratifying.

Deep Roentgen Therapy in the Treatment of Malignant Growths

DR. SAMUEL STERN, New York: By using a 3-mm. aluminum filter and a ray of high penetration, three or four erythema doses can be administered without producing even a first degree dermatitis. The amount generally administered at one sitting is about 15 to 20 x, measured under 13 mm. aluminum. This can be given once every three weeks, or under certain conditions oftener, without any danger. Certain tissues possess a wonderful tolerance for almost any amount of Roentgen rays, as, for instance, the mucous membrane of the vagina. By carefully protecting the outside area, one can give through the vagina daily treatments, lasting for one hour each time, continued indefinitely for weeks, without producing even the slightest dermatitis. The degree of penetration most advantageous in deep therapy is from 8½ to 9 Bauer. Anything below this does not possess a sufficient quality of hard rays to produce the best effects. No operable

cases of deep-seated malignant growths should be treated with the Roentgen rays except when patients refuse to be operated on. The treatment is reserved for inoperable cases, recurrences, and prophylactic treatments following operation.

Technic and Recent Results of Deep Roentgen Therapy

DR. JAMES T. CASE, Battle Creek, Mich.: For deep therapy, I use the Coolidge tube with a minimum focus skin distance, a penetration equivalent to at least a 9-inch parallel spark gap between points, delivering the ray through 4 mm. of aluminum and a layer of sole leather, the time of exposure varying, of course, with the focus skin distance and the dosage required. The maximum dosage given any one skin area within a three-weeks' period should not exceed 18 or 20 Kienboeck units, measured by the Gauss modification of the number of skin areas, it was possible to introduce from 400 to 700 x units during each three-weeks' period, remembering, however, that no given skin area should receive more than 18 or 20 x as a maximum.

The final result in malignant cases may usually be judged by the result of the first series of treatments. Especially good results in my experience were obtained in uterine hemorrhage due to myomas and other causes. In hyperthyroidism, persistent thymus, Hodgkin's disease and leukemia, especially good results were also obtained. A few cases of malignancy have been symptomatically cured. Sufficient time has not yet elapsed for any definite statements regarding the final results. There is no question as to the good palliative results. Sarcoma has been found to be, on the whole, more responsive to the treatment than carcinoma, with the exception of periosteal sarcoma, no case of which, in my experience, has given any satisfactory results.

Massive Versus Fractional Dose in Roentgen Therapy

DR. A. M. COLE, Indianapolis: The "massive" dose which is accurate and convenient is not suitable for the treatment of all diseases amenable to roentgenotherapy. Its greatest field is in deep therapy and for destructive action on cancer cells. The fractional dose gives better results in skin diseases calling for stimulation, and where you desire to produce atrophy of the skin appendages. Also in such conditions as leukemia and Hodgkin's disease. For safety it is the best method when the entire face is to be treated. The fractional dose may be measured by means of the H. Scale where great accuracy is essential. With either method of roentgenotherapy technic is the *sine qua non*. This is especially true with the "massive" dose to avoid the great possibilities of danger. The keeping of a record in each "massive" dose treatment is most important.

DISCUSSION

DR. J. H. EDMONSON, Birmingham, Ala.: In rodent ulcer I prefer the soft ray. It has a more lasting effect than the hard or filtered ray. Skin lesions respond better to fractional than to massive doses. I use massive doses in the average cutaneous epithelioma, but not in the spreading superficial type.

DR. GEORGE C. JOHNSTON, Pittsburgh: The idea to-day is to get all the rays possible as hard as possible, and filter them through three layers of aluminum. There is a great deal of error in that. The massive dose is very necessary in some conditions, such as lesions deep in the pelvis, but the majority of cases which we treat are not of that type. Only that radiation is effective which is transformed in the cells we wish to reach. The effect manifested depends entirely on

amount of energy absorbed and transformed in the tissues, macro on the amount of rays that pass through them. Deep edly di, y is intended for deep lesions only, not for rodent without or lupus, or other superficial lesions.

up and s, M. CRANE, Kalamazoo, Mich.: To apply the same DR. HUG, various lesions without relationship to their nature cases of t, ion in the body or their reaction to the Roentgen ns, and ag. The Roentgen ray may cause tissue death as the, ayed ue growth. The subject of immunity enters into not MILES F. When we treat tubercular glands of the neck ther, arch rests tigen ray, changes are brought about in the ulcers Dr. A. tech.

blood-stream similar to those produced by an injection of tuberculin. When we apply a sufficient dose of the Roentgen ray to a cancer we cause a disintegration of the cancer cells. They are absorbed into the body. A negative opsonic index is produced, and the patient may die. If we consider the subject of Roentgen therapy from that standpoint, we will be more careful in doing this work. We must not give more radiation than the body can react to; therefore, the single massive dose will not always do, because the tissues will not be able to react to it. Such treatment is not rational.

DR. R. H. STEVENS, Detroit: The epithelial cells of the papillae of the scalp hairs are much more sensitive to the ray than the cells of the papillae of the lanugo hairs. The cells of certain organs are much more sensitive than those of other organs. Again, the amount of the ray depreciates as it is absorbed. There are certain types of growth that respond well to the Roentgen ray and others that do not. This may be due to the character of the gamma rays. If in a case of nevus you filter the rays through a few sheets of paper, it is very satisfactory, because we get a large amount of the gamma rays. Birthmarks do not respond to the Roentgen ray, no matter whether you use a soft or a hard tube. They do respond to the ultraviolet rays and the beta rays, although some are very penetrating, as much so as the gamma rays. Moles will not respond to the Roentgen ray, but respond well to the radium ray.

DR. H. W. DACHTLER, Toledo, Ohio: My results with the massive doses in diseases of the eyelids have not been so good as from old methods. I attribute that to the fact that the scar is more contracted. In one case I had an eversion of the eyelid, which I did not see in my earlier work. So far as deep therapy is concerned, I wish we could get tubes to give harder rays. I want to get a more uniform treatment in the depths of the tissue. We must be careful in saying that only rays absorbed in the tissues do the work. I never use a softer ray than a Bauer 6 in any superficial work, and I never filter.

DR. H. K. PANCOAST, Philadelphia: In enlarged thymus leukemia and Hodgkin's disease we must be careful about giving massive doses. In some cases of Hodgkin's disease massive doses will undoubtedly cause a fatal result. In leukemia we must be still more careful, because the patient's kidneys must be considered. They may be overtaxed by the elimination of waste products. Large doses of Roentgen rays may destroy not only liver cells, but also red cells.

Advanced Roentgen Technic in the Diagnosis of Esophageal Lesions

DR. W. H. STEWART, New York: Into the esophagus is inserted either by swallowing or artificially, a long hollow cylinder of some soft material which, after being placed in position, is filled with a bismuth solution. This bismuth-filled tube, adapting itself to the natural form of the esophagus, will give either by the fluoroscope or by the roentgenogram an accurate reproduction of the esophagus. Thin tubing of rubber, gold beater's skin, hog or sheep casing was used. Up to the present time, however, I have been most successful with the best grade of hog casing. In introducing the hog casing there must necessarily be considerable nervous strain and sense of suffocation, particularly when the bismuth solution is injected into the tubing. It is advisable to spray the pharynx with a 2 per cent. solution of cocaine to prevent gagging and coughing. A section of hog casing is then selected, about 16 to 18 inches in length—it must be tested with water before using to be sure that no bad leaks are present. One end is tied firmly with some dental floss.

After lubricating the casing the first procedure is to attempt to have the patient swallow this down to or through the obstruction. In cases, however, in which the stricture is very tight and the patients themselves are unable to pass it on beyond the obstruction, we must resort to artificial means of introduction, by means of a French catheter. There are cases, however, in which the stricture is so tight that an attempt to withdraw the catheter also removes the casing. In these patients we have provided a rubber tubing, about 12 inches long, with a hollow metal tip at the lower end and

a metal junction at the upper end, to which is attached another piece of rubber tubing about 7 inches long. The lower tube is fenestrated at frequent points. This lower section is passed into a piece of hog casing, previously tested and found satisfactory, and tied firmly below to the metal tip, and above to the metal junction, after which it is again tested with water to see that no leaks are present. Into this rubber tubing is placed a metal introducer, much the same as a stylet catheter. The tubing is directed downward into the esophagus and passed a sufficient distance to make one confident that the lower metal tip lies within the stomach. Then with a quick upward motion the introducer can be safely removed. We now have the hog casing within the esophagus enclosing a rubber fenestrated tube. It is necessary now only to inject sufficient of the bismuth solution to balloon out the casing. We are usually able to tell when this has been accomplished by the symptoms of the patient, who immediately complains of a feeling of distress along the line of the sternum, with dyspnea. Gravitation has been found to be the best method in which to fill the tube. When the required quantity has passed in or the patient complains of marked dyspnea, it is well to discontinue, placing a clamp on the rubber tubing. The plate should then be made rapidly.

We have been successful in using this method in differentiating between diverticulum and carcinoma, one of the most puzzling problems to solve. The vital observation necessary in differentiation is the presence of the sacculum posterior and outside of the bismuth-filled hog casing, lying within the esophagus.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Anatomy, Philadelphia

September, XVI, No. 4, pp. 387-521

- 1 *Skull of Human Fetus of 40 mm. C. C. Macklin, Toronto, Ont.
- 2 Critical Period in Development of Intestines. C. R. Bardeen, Madison, Wis.
- 3 Earliest Blood-Vessels in Man. J. L. Bremer, Boston.
- 4 Retrogressive Changes in Fetal Vessels and Suspensory Ligament of Liver. A. W. Meyer, San Francisco.

1. Skull of Human Fetus 40 M.M.—The finding of a small nodule of cartilage above and in front of the cochlea is, so far as Macklin is aware, a contribution to his knowledge of the parts in this area. Other new features are the cartilages para-ethmoidalis, meatus medii and paraseptalis superior; in addition may be mentioned the lateral and dorsal cranial cartilages, and the paranasal cartilage, lying lateral to the lacrimal duct.

American Journal of Medical Sciences, Philadelphia

September, CXLVIII, No. 3, pp. 313-468

- 5 Severe Anemia Connected with Gastro-Intestinal Diseases. A. Schmidt, Germany.
- 6 *Relation of Glycosuria to Pituitary Disease. Report of Case. J. M. Anders and H. L. Jameson, Philadelphia.
- 7 *Value of Tests for Renal Function in Early and Advanced Bright's Disease. R. Fitz, Boston.
- 8 *Intravenous Use of Strophanthin with Regular and Irregular Pulse Rhythms. H. G. Schleiter, Pittsburgh.
- 9 *Value of Colonic Inflation in Diagnosis of Chronic Appendicitis. E. H. Goodman, Philadelphia, and C. W. Lüders, Cynwyd.
- 10 Duodenal Alimentation. W. G. Morgan, Washington, D. C.
- 11 *Tuberculosis of Bronchial Lymph-Nodes and Lung Hilus; Clinical and Roentgenographic Study. H. F. Stoll and A. C. Heublein, Hartford, Conn.
- 12 Two Cases of Hereditary Ataxia. E. M. Williams, Sioux City, Iowa.
- 13 Cholesterin Antigens in Wassermann Reaction and Quantitative Testing of Syphilitic Sera. J. G. Hopkins and J. B. Zimmermann, New York.
- 14 An Unattached Mass Found in Abdominal Cavity of Male. R. P. Campbell and J. J. Ower, Montreal.
- 15 *Value of Petechiae in Diagnosis and Prognosis. H. W. Emsheimer, New York.
- 16 *Neutrophilic Blood-Picture in Pernicious Anemia. L. H. Briggs, San Francisco.

6. Relation of Glycosuria and Pituitary Disease.—In support of the fact that hyperthyroidism may be consequential to lesions of the hypophysis, Anders and Jameson report a case of acromegaly with glycosuria in which there were manifestations of exophthalmic goiter. They have also collected all cases of pituitary disease recorded in literature for a period of five years terminating December 31, 1913. This investigation yielded a total of 246 cases of hypophyseal disease. In 183 cases the urinary findings were mentioned and showed 28 instances of glycosuria, in 9 of which the condition was intermittent. Sixteen of the 28 cases of pituitary glycosuria, or 57.1 per cent., showed acromegaly, while 10, or 35.7 per cent., failed to show the latter condition in association. In 2 cases the presence of acromegaly was in doubt, hence excluded. Of the 183 cases of pituitary disease in which the urinary findings were given, 88, or 42.6 per cent., showed acromegaly, and of the latter only 16, or 18.2 per cent., showed the presence of sugar. In 91 cases of pituitary disease in which acromegaly was absent, 10 showed spontaneous glycosuria, and no mention was made of either hypo- or hyperthyroidism in these cases. There was tumor in 72 cases (of which 3 were specified as sarcoma, 2 cyst, 1 adenocarcinoma, 1 epithelioma, 1 adenoma, and 4 as "tumor"), tuberculosis in 3, gumma in 2, hypertrophy in 1, fracture at base of skull with extravasated blood in 1, and lesion not stated in 8. The ages in the series were given in 21 cases, out of the total of 28, and found to average thirty-seven and one-quarter years, the period of life intervening between 26 and 60 years furnishing all save 3 cases.

In view of the fact that glycosuria not uncommonly complicates exophthalmic goiter, the question naturally arises whether in a case such as reported by the authors it is to be attributed to the associated hyperthyroidism or to the hypophyseal disease. Covering five years which ended January 1, 1914, there was but 1 case of hyperthyroidism in combination with pituitary lesions and glycosuria out of a total of 28 cases recorded, namely, their own case herein reported, so that the rôle played by the thyroid gland in the causation of glycosuria in these cases would appear to be both trivial and obscure.

The authors advance two hypotheses pertaining to the combined conditions discussed which have received considerable corroborative support from their statistical figures: (1) that the relationship existing between hyperthyroidism and pituitary glycosuria, with or without acromegaly, is a remote one, and (2) that pituitary glycosuria without acromegaly not uncommonly occurs (in 10 of the series, as against 16 in which acromegaly was also associated), contrary to the opinions of certain writers.

7. Tests for Renal Function in Bright's Disease.—Tests for renal function in Bright's disease are regarded by Fitz of importance for diagnosis, prognosis and treatment. The lactose, salt, water, potassium iodid, and nitrogen tests are of special value in the early diagnosis of nephritis. In advanced nephritis the functional condition is so complex that tests to estimate total function are more useful than those designed to study the function of different parts of the kidney. The phthalein excretion is the most satisfactory single test. The non-protein nitrogen of the blood offers additional information in regard to faulty eliminative powers on the part of the kidney. Yet cases occur in which both blood-nitrogen and phthalein are normal, and chlorid retention is an important factor in the disease. Finally, acidosis has been shown to exist in uremia. Since no one test is perfect in determining total renal function, cases must be studied from several points of view. A rational dietetic treatment can be given in individual cases based on the conditions disclosed by the study of the kidney's selective excretory capacity.

8. Intravenous Use of Strophanthin.—The action of strophanthin administered intravenously is similar to that of other members of the digitalis group administered orally, but far more rapid. Strophanthin had, in cases treated by Schleiter, a decisive effect in all cases with pulsus irregularis perpetuus. In cases in which the pulse rhythm was regular, it showed an effect in only three instances out of ten

and this was both slight and transitory, except for the case of paroxysmal tachycardia. In desperate cases of the pulsus irregularis perpetuus type, strophanthin administered intravenously will tide the patient over until digitalis orally administered has time to take effect. In cases of the pulsus irregularis perpetuus type, the first effects are noted in twenty to thirty minutes, though the maximum may not be apparent for seven or eight hours. Thus effect lasts from three to ten days. It does not seem advisable to give on any one occasion more than $\frac{1}{60}$ of a gr. and this, if repeated, should not be done before forty-eight hours; $\frac{1}{120}$ of a gr. has given a maximum result. On the other hand it may sometimes take more than $\frac{1}{60}$ of a gr. to produce this. Two cases of paroxysmal tachycardia are reported with strophanthin administration, both followed by cessation of the attacks. It is not clear, however, to what extent the strophanthin was responsible for this phenomenon.

9. **Colonic Inflation in Appendicitis.**—Inflation of the colon, the authors state, should be regarded merely as an aid in the diagnosis, history and physical examination being far more valuable. The authors have seen no positive reactions in normal individuals. The test is in no sense pathognomonic of chronic appendicitis.

11. **Tuberculosis of Bronchial Lymph-Nodes and Lung Hilus.**—Stoll and Heublein claim that prior to the fifteenth year, tuberculosis of the bronchial glands and lung hilus is the most common form of tuberculous disease. The early symptoms are usually indefinite and chiefly of toxic origin. While a cough is generally present, it may be entirely absent even with advanced disease of the bronchial glands. Although the orthodox signs of incipient (apical) tuberculosis are not present in these cases—in fact, the primary lesion is often in the lower lobe—there are certain physical signs which are indicative of a pathologic process at the lung root. The significant signs are a "hilus dimple" (noted anteriorly over the hilus region at the end of inspiration), dilated veins, parasternal and paravertebral dullness, and most significant of all, a well-marked whispered bronchophony in the interscapular region (d'Espine's sign). Roentgenography, and especially stereoroentgenography, is of the utmost value in these cases, as it shows the exact location and extent of the morbid process, and is the greatest stimulus to careful clinical work.

15. **Value of Petechiae in Diagnosis and Prognosis.**—Ten cases are cited by Emsheimer in which petechiae were present. I. History of erysipelas, followed in two weeks by high fever and prostration; petechiae in conjunctiva; diagnosis of streptococcemia made; bacillus typhosus in blood-culture. II. Acute onset with fever, vomiting and convulsions, in a child; signs of meningitis; skin petechia; no meningococci in spinal fluid; recovery; acute polio-encephalitis. III. Acute labor pneumonia; jaundice; pneumococcic sepsis; petechia. IV. Emaciation; marked anemia; conjunctival petechia; admitting diagnosis; pernicious anemia; blood-count typical of lymphatic leukemia. V. Signs of purpura hemorrhagica; steady progression of symptoms; ulcerations and gangrene; fatal outcome. VI. Case of myocarditis and nephritis; bacillus coli communis pyelitis; petechia in conjunctiva; sudden death. VII. History of a debauch; conjunctivitis; numerous petechiae in upper and lower conjunctivae. VIII. History suggestive of an acute exacerbation of a chronic nephritis; marked eosinophilia; conjunctival petechiae; trichiniasis. IX. History of bite by rabid dog; increasing irritability, finally coma and death; skin petechia. X. History and signs of acute appendicitis; chills and fever; petechiae in conjunctivae; weak heart sounds; diagnosis of bacterial endocarditis with mesenteric embolus; acute gangrenous appendicitis found at operation.

16. **Neutrophilic Blood-Picture in Anemia.**—In the course of some work on the Arneth blood-picture in various conditions, the multiplicity of lobes of the neutrophils in a case of pernicious anemia was observed by Briggs. This particular point has since been studied in nine consecutive cases seen during the past year and in the stained smears from three others. In ten out of twelve cases a decided increase in the normal number of lobes of the nuclei of the neutrophils was

found, that is, a "shift to the right" in the terms of Arneth. In eight cases of correspondingly severe anemia, not of the idiopathic pernicious variety, seven showed either a normal number, or a decrease in the number of lobes, a "shift to the left."

American Journal of Tropical Diseases and Preventive Medicine, New Orleans

September, II, No. 3, pp. 155-222

- 17 Ants and Bees as Carriers of Pathogenic Micro-Organisms. W. M. Wheeler, Boston.
- 18 Morphology, Life Cycle and Relation to Disease of Entamoeba Histolytica. C. F. Craig, Fort Leavenworth, Kan.
- 19 Behavior of Hansen Bacillus in Vitro. C. W. Duval, New Orleans.
- 20 Diphtheroid Organisms Isolated from Lymphadenomatous Structures of Body. J. A. Lanford, New Orleans.
- 21 An Epidemic of Malaria at Greenwich, Conn. F. C. Hyde, Greenwich, Conn.
- 22 Report of an Unusual Amebic Infection of Genito-Urinary Tract. W. J. Lynn, New Orleans.
- 23 Case of Bilateral Ainhum. H. B. Gessner, New Orleans.

Boston Medical and Surgical Journal

September 24, CLXXI, No. 13, pp. 473-508

- 24 Improved Nursing for Mentally Ill. W. Channing, Brookline.
- 25 Training of Psychopathic Nurse. M. A. Nutting, New York.
- 26 Comparison of Drugs Used in General and Mental Hospitals. D. Gregg, Boston.
- 27 Modern Developments in Mental Nursing. C. W. Eliot, Cambridge.
- 28 Analysis of Recoveries at Psychopathic Hospital, Boston: I, One Hundred Cases, 1912-1913, Considered Especially from Standpoint of Nursing. E. E. Southard, Boston.
- 29 Impressions of General Hospital Nurse Beginning Work in Psychopathic Hospital. M. L. Gerrin, Boston.
- 30 Pellagra and Its Symptoms; Importance of Mouth and Gastro-Intestinal Lesions. J. B. MacDonald, Hathorne.
- 31 Hysterectomy and Hemorrhage: Three Different Indications. H. B. Perry and E. E. Thomas, Northampton.

Bulletin of Johns Hopkins Hospital, Baltimore

September, XXV, No. 283, pp. 255-286

- 32 Relations of Internal Medicine to Psychiatry. L. F. Barker, Baltimore.
- 33 *Korsakow's Psychosis Occurring During Pregnancy. D. K. Henderson, Baltimore.
- 34 *Bacteria Found in Milk Heated to Various Temperatures. W. W. Ford, Baltimore, and J. C. Pryor, Washington.
- 35 Presence of Spore-Bearing Bacteria in Washington Market Milk. J. C. Pryor, Washington.
- 36 *Action of Potassium and Sodium Iodids and of Iodin Ion on the Heart and Blood-Vessels. D. I. Macht, Baltimore.

33. **Korsakow's Psychosis Occurring During Pregnancy.**—Henderson reports 2 cases. The first case may be summarized as follows: A multipara, aged 31 years, in the first month of her second pregnancy started to suffer from nausea and vomiting, and rapidly lost in weight. She then complained of numbness and weakness in the feet, legs and hands. She became depressed, started to fabricate, lost trace of time, and was getting worse so rapidly that an abortion was performed when the patient was three months pregnant. A delirium with fear reaction ensued, she lost power in her hands completely, had incontinence of urine and feces, aphonia, paralysis of the diaphragm, and, probably, also at this time tachycardia. On admission to the hospital the patient was delirious and showed the characteristic symptoms of a generalized polyneuritis. In addition, she had a double adductor paralysis of the vocal cords, and involvement of both the phrenic and vagus nerves. During her hospital residence the striking points in her mental condition have been the exceedingly poor power of retention, the tendency to confabulate, and the unstable emotional condition. Both mentally and physically a wonderful improvement has resulted.

The second case differs from the first in that the psychosis was not accompanied by any polyneuritic symptoms.

The points on which Henderson especially lays stress are: The pregnant state must in certain cases be recognized as an important etiologic factor in the production of peripheral neuritis, and of that condition known as Korsakow's syndrome. The neuritis caused may be either (1) local, that is, affecting one nerve or one limb, or (2) diffuse, that is, affecting all the limbs and certain of the cranial nerves. The mental disorder characteristic of the condition is usually associated with a generalized polyneuritis, but, as evidenced by one case reported here, it may occur alone. The frequent

history of hyperemesis gravidarum in association with the generalized forms of the disorder is so striking that it suggests a possible line of approach as to the elucidation of the nature of the toxin. Those patients who in previous pregnancies have suffered from severe vomiting, or other serious toxic phenomena, should be strongly urged to avoid any further pregnancies.

34. Bacteria Found in Milk Heated to Various Temperatures.—Ford and Pryor agree with Flüge that milk always contains the heat-resistant spores of aerobic and anaerobic bacteria, which, by their development, can give rise to disagreeable and unwholesome changes in milk, converting it from a food of great nutritive value into an undesirable if not a dangerous article of diet. These changes take place in milk heated to any temperature from 65 C. to 100 C. and kept at any temperature from 22 C. to 37 C., but not at that of the ice-box, 4 to 6 C. The spores of the bacteria causing these changes survive in milk for long periods of time on ice and can initiate the same changes in milk kept on ice when transferred to higher temperatures. There is a danger zone in the heating of milk which may be described as ranging from about 65 C. to 85 C. in which milk will never clot normally. Below this temperature heated milk may clot normally. Above this temperature milk will either clot or slowly peptonize. The problems of pasteurization of milk must be worked out on the basis of the changes which occur in milk heated to 60 to 65 C. and the result may depend on the original character of the milk, on local bacterial infections of milk, on the character of the stables in which the milk is first obtained, on the methods of preservation or on unknown factors. Further investigation alone can determine these points.

With present knowledge as to the difficulty of getting milk free from pathogenic organisms the safest milk is that which has been boiled for a time varying from ten minutes to half an hour and then preserved on ice. In such milk the organisms giving rise to explosive and putrefactive changes are destroyed, while the organisms which remain usually coagulate the milk or coagulate it and then peptonize it. Rarely they peptonize it without coagulation. While these bacteria may give rise to severe derangements of metabolism in children, and even to disease, as Flüge maintains, this has not yet been clearly shown clinically. Danger from them may probably be almost entirely eliminated by keeping the milk on ice from the time of boiling till the time of use. Milk heated to any temperature from 60 C. to 100 C. must be kept on ice, since heated milk is far more apt to decompose than raw milk.

36. Action of Potassium and Iodin Ion on Heart and Blood-Vessels.—Experiments showed Macht that the potassium ion produces a relaxation of the blood-vessels and a marked depression of the heart; that the sodium ion has a slightly stimulating action on the blood-vessels and also stimulates the heart, and that the iodine ion is a powerful stimulant to both the heart and blood-vessels as shown by its action in experiments on isolated organs. The stimulating effect of the iodine ions, however, is greatly inhibited in the intact animal by their chemical combination with the proteins of the blood. Whether the chemical compound thus produced is a stable one, or whether it is a loose one, and slowly breaks up, setting iodine free, remains an open question. If iodine is set free, a stimulating effect is to be expected.

The action of sodium and potassium iodides on the heart and vessels can be best understood from the action of their component factors. Sodium iodide possesses no depressing property, for the sodium ion is a vascular constrictor and a cardiac stimulant, and the iodine ion, in so far as it is free to act, has the same action. Potassium iodide, on the other hand, clearly shows the depressing effect of the potassium ion on the heart and vessels, especially of mammals, not only on isolated organs, but also in the living animals. It is, therefore, not a matter of indifference which of the iodides is to be chosen for the purpose of depressing the circulation, as, for instance, in case of an aneurysm. The above pharmacologic analysis of the action of the iodides, furthermore, shows that so far as experimental evidence goes, the iodides possess

no special virtue of lowering blood-pressure but that effect is really due entirely to the potassium, and could be produced even more efficiently by other potassium salts.

Florida Medical Association Journal, Jacksonville

September, I, No. 3, pp. 65-96

- 37 Diagnostic Value of Abdominal Pain in Surgical Diseases of Upper Abdomen. J. E. Boyd, Jacksonville.
- 38 Case of Secondary Multiple Echinococcus Cysts of Peritoneum, Complicating Acute Appendicitis. J. S. Helms, Tampa.
- 39 Malignant Tumors of Jaws. R. C. Turck, Jacksonville.
- 40 Six Cases of Pellagra in One Family. J. L. Kirby-Smith, Jacksonville.
- 41 Two Recoveries from Epilepsy. W. P. Spratling and D. C. Main, Welaka.

Georgia Medical Association Journal, Augusta

September, IV, No. 5, pp. 137-165

- 42 Some Cardinal Symptoms in Diagnosis of Appendicitis. A. G. Little, Valdosta.
- 43 *Suprapubic Prostatectomy. W. L. Champion, Atlanta.
- 44 Diagnosis of Disease of Accessory Sinuses of Nose. J. T. Maxwell, Savannah.
- 45 *Oil-Ether Colonic Anesthesia. J. C. Pate, Valdosta.
- 46 High Forceps and Cesarean Section. A. Smith, Atlanta.
- 47 Cleaning Up of Typhoid in Blackshear. W. P. Williams, Blackshear.

43 and 45. Abstracted in THE JOURNAL, May 2, pp. 1428 and 1429.

Illinois Medical Journal, Chicago

September, XXVI, No. 3, pp. 153-220

- 48 Roentgenology of Chronic Joint Disease. J. T. Case, Battle Creek, Mich.
- 49 Etiology and Pathogenesis of Rheumatoid Arthritis. D. J. Davis, Chicago.
- 50 *Medical Management of Chronic Arthritis. F. Billings, Chicago.
- 51 Role of Pylorus in Etiology and Treatment of Gastric Ulcer. J. C. Friedman and W. W. Hamburger, Chicago.
- 52 Modern Gastroscopy with Demonstration of Sussmann Gastroscope. A. A. Goldsmith, Chicago.
- 53 Arteriovenous Anastomosis in Upper Extremities for Impending Gangrene. D. W. Neal, Springfield.
- 54 Psychoneuroses and Their Treatment. F. P. Norbury, Springfield.
- 55 Present Status of Treatment of Pulmonary Tuberculosis. J. W. Pettit, Ottawa.
- 56 Two Hundred Cases of Gonorrheal Urethritis without Complication. I. S. Koll, Chicago.
- 57 Hobbies. H. C. Blankmeyer, Springfield.
- 58 Illinois School for Blind with Its Record of Causes of Blindness. A. L. Adams, Jacksonville.
- 59 Experience with Intravenous Injections of Neosalvarsan. E. Sargent, Moline.

50. Medical Management of Chronic Arthritis.—The main problem, Billings says, is to get rid of the systemic infection and finally to overcome its sequence—the deformities. Primary rest is necessary as long as motion causes pain. In varying time, four to six weeks, passive motion with gentle massage may be begun. The amount of passive exercise must be gauged by the effect on the individual. The patient, always more or less nervous, tires easily. To these patients tire is painful. Day by day the exercise must be increased. The rest, restorative measures (food, etc.), should improve the general nutrition and blood circulation. The passive exercise will gradually improve the local blood circulation and oxygen supply to the infected tissues. In due time active exercise is added. This must be systematically and regularly performed. Usually a nurse or masseuse should teach the patient the lighter forms of calisthenics. These measures, namely: rest, restorative food, pure air, environment of optimism, graduated passive and later active exercises will overcome the debility, malnutrition and poor general circulation. They will also help to restore the local circulation and oxygen supply to the infected tissues. By these measures the natural defenses of the body are improved, the infected tissues become richer in oxygen and consequently a poor culture medium for the invading micro-organisms. Finally the destructive progressive metabolic changes of the tissues cease. Gradually one may note favorable changes in the joints. Atrophied, contracted muscles increase in bulk and functionate. But one dare not relax the control of the patient. Daily systematic passive and active exercises increased gradually must be continued until a relative restoration occurs. Otherwise a relapse is apt to occur because of neglect of one or more of the above important factors relating to nutrition, general and local blood supply, etc.

Autogenous vaccines made up of the dominating strains of streptococci obtained from the tissues and exudates of the focus of infection have been used by Billings. The dose used has been from 100,000,000 to 1,000,000,000. The large dose does not seem to be any more effective than the small one. The use of autogenous vaccines appears to increase the defenses of the body as judged by a study of the opsonins and phagocytic index. It is Billings' opinion that the general measures of management and treatment are absolutely necessary to succeed in helping these patients. To this management may be added autogenous vaccination without fear of harmful results. The use of stock vaccines seems rational. The use of vaccines in the treatment of chronic deforming arthritis without attempting to find or remove the dominating etiologic focus of infection and without a systematic hygienic management is irrational and most unjust to the patient.

Journal of Nervous and Mental Disease, Lancaster, Pa.

September, XLI, No. 9, pp. 553-616

- 60 *Hemiatrophy of Cerebellum in Case of Late Catatonia. A. E. Taft and M. E. Morse, Boston.
- 61 *Pneumograph, New Instrument for Recording Respiratory Movements Graphically. A. Knauer and W. J. M. A. Maloney, New York.
- 62 Comparison of Wassermann Reaction among Acute and Chronic Insane. I. A. Darling and P. B. Newcomb, Warren, Pa.

60. Hemiatrophy of Cerebellum.—Taft and Morse report a case of focal unilateral cerebellar disease of long standing (months or years) apparently quiescent (no signs of exudation) and beyond question due in large measure to arterial thrombosis (no histologic or clinical evidences of syphilis; Wassermann reaction negative in pericardial fluid post mortem). The lesion was not in the nature of an old cyst of softening, but rather the result of gradual shrinkage and induration, possibly due to an unusually gradual thrombosis.

61. Pneumograph, New Instrument.—The instrument devised by Knauer and Maloney consists of two parts, a chest piece to which the respiratory movements are communicated and a recording apparatus which writes those movements. The tambours contain no rubber to leak. The recording paper needs not to be blackened and neither varnishing nor drying is necessary. A roll is used instead of a single sheet, so that observations may be continued for prolonged periods. The driving machinery is practically self-regulating. The writing point pressure is self-adjusting. The instrument is said to make the recording of the respiration movements as simple as is the application of electricity. This pneumograph is of service in all psychogenic speech disturbances such as stammering, aphonia spastica, etc., cases in which breathing exercises are indicated; in the treatment of obsessions and psychogenic fears, which can be beneficially influenced by methodical regulation of the rate and character of the respiratory movements; and in the teaching of conscious control of muscular movements. The machine is also of use in obtaining an index to emotional reactions in mental states.

Kentucky Medical Journal, Bowling Green

September 15, XII, No. 18, pp. 529-578

- 63 Gonorrhea in Male. R. T. Hocker, Arlington.
- 64 Help the Hospital. E. G. Daviess, Owensboro.
- 65 Uterine Displacements: Varieties and Treatment. O. W. Brown, Lexington.
- 66 Problems in Infant-Feeding. J. T. Dixon, Owensboro.
- 67 Dysmenorrhea Cured by Treating Nose. Report of Case. D. M. Griffith, Owensboro.
- 68 Our Ethics. T. H. Gamblin, Monticello.
- 69 Some Functions of Acrens and Thyroids. G. J. Hermann, Newport.
- 70 Fecundation, Conception and Gestation. W. E. Reynolds, Hopkinsville.
- 71 Chronic Intestinal Stasis: Its Causes and Relief. J. E. Pirrung, Covington.
- 72 Treatment of Pellagra. R. F. Robinson, Hopkinsville.

Medical Record, New York

September 26, LXXXVI, No. 13, pp. 531-572

- 73 Chronic Intestinal Stasis. A. C. Jordan, London.
- 74 *Fractures and Burns. J. A. Wyeth, New York.
- 75 Operations for Inguinal Hernia under Local Anesthesia. J. A. Bodine, New York.

- 76 Fractures. A. Lyle, New York.
- 77 Cancer. W. S. Bainbridge, New York.
- 78 Salvarsan in Syphilis. A. J. Crowell and J. P. Munroe, Charlotte, N. C.
- 79 *Comparative Wassermann, Cobra and Globulin Tests in Syphilis. W. J. Stone, Toledo, Ohio.
- 80 Backache and Posterior Parametritis. A. Jacoby, New York.
- 81 Abrams' Method of Treatment in Aneurysms. A. Abrams, San Francisco.

74. Fractures and Burns.—When a severe burn or scald is encountered, Wyeth says, the immediate indication is relief of pain by the hypodermatic administration of morphin, or by some form of opium given by rectum or stomach. The most convenient local remedy is a saturated solution of baking soda in water, with submersion of the burned surface, if possible, or a mixture of bicarbonate of soda and cornstarch, one teaspoonful of each to a quart of water. The dressing should be kept wet with the solution, which is applied freely to the burned area. After five or six hours the free application of the following mixture, made into an emulsion, will be found beneficial:

Ichthyol—5ss, cotton-seed or olive oil—O.ss, limewater—O.ss. This should be continuously applied for the first three to five days during the stage of acute inflammation. In order to bring about rapid repair of the skin the following ingredients may be used: Lead plaster, liquid albolene, lanolin, vaselin—āā 5j. These are melted together, and, when cooling, 40 minims of ichthyol added.

Either of these ointments should be applied thickly on the soft linty side of cotton flannel, on surgeon's lint, or on several layers of sterile gauze. The application should be repeated daily at first, after opening all blebs. In opening the blebs care should be taken not to remove the epidermis of the bleb, as this may become revitalized, thus greatly accelerating the healing process. In changing the dressing it is important not to disturb new granulations, but simply to wipe over them. When healing is well under way the dressing need be changed only every second or third day. In the treatment of the depression of shock which often follows severe burns, stimulation with whiskey or brandy, by enema or by mouth, is indicated, as well as the hypodermic injection of morphin. Physiologic salt solution, introduced by the colon, or injected into the areolar tissue, is of great value.

In an emergency when the remedies mentioned may not be obtained, a coating of ordinary white lead, as mixed for use in painting dwellings, is an efficient protection when poured over the burn. Flour sprinkled over until all the excoriated surface is well hidden is a method of treatment which is applicable in almost any emergency. Rubber tissue, or oil-silk, sterilized and laid over the raw surface, with cotton batting applied over it, but never directly on the burned surface, is equally efficient. Lint, or a soft cloth, dipped in a 2 per cent. carbolic oil, may be employed directly on the burn. No pressure should be exercised in holding the dressings in place. When the back and posterior aspects of the extremities are chiefly involved, the prone position is of necessity maintained.

79. Comparative Wassermann, Cobra and Globulin Tests in Syphilis.—The observations made by Stone comprise comparative cobra, Wassermann, and globulin tests in 150 individuals. All "suspicious" reactions have been excluded. In 30 normals and controls the Wassermann and cobra tests were negative. In 6 of these the globulin test was negative in spinal fluid. In 90 other normals and controls the cobra test was negative. In 22 patients with secondary syphilis the Wassermann and cobra test were positive. In 5 of these the globulin test was also positive in the spinal fluid, while in 7 the globulin test was positive in the blood-serum. In 7 patients with active and latent tertiary syphilis the cobra blood test was positive, and the globulin test in blood-serum and spinal fluid were positive. In 24 late tertiary and clinically cured cases both Wassermann and cobra tests were negative. In 1 patient with cerebral lues the Wassermann and cobra tests were negative while the globulin test was positive in blood-serum and spinal fluid. In 7 patients with syphilis the cobra test was positive and the Wassermann was negative, while in 14 instances the Wassermann was positive

and the cobra negative. Two of the latter were instances of early secondaries five and six weeks after infection, in which the diagnosis was not in doubt.

Military Surgeon, Chicago

September, XXXI, No. 3, pp. 211-310

- 82 Problems of Routine Sanitary Service. P. Waterman, Conn. N. G.
83 Organization of Red Cross Personnel for War. G. M. Blech, Ill. N. G.
84 Case of Leontiasis Ossium. J. R. Church, U. S. Army.
85 New Method of Carrying Patient, with One or Two Bearers, without Litter. F. H. Trindler, U. S. Army.
86 Blue Button, an Undescribed Type of Tropical Ulcer of West Indies. G. C. Dolley, U. S. Army.
87 Rhinal Myiasis. Report of Two Cases. E. C. McCulloch, U. S. Army.
88 Prevention of Scurvy. P. M. Ashburn and F. Schmitter, U. S. Army.
89 Id. Effect of Boiling on Antiscorbutic Properties of Canned Cabbage. F. Schmitter, U. S. Army.

Missouri State Medical Association Journal, St. Louis

September, XI, No. 3, pp. 113-156

- 90 *Sprains. H. C. Shuttee, West Plains.
91 Diagnosis of Congenital Syphilis in Infants and Children. E. H. Schorer, Kansas City.
92 Placenta Praevia. F. T. Van Eman, Kansas City.
93 Treatment of Deformities Following Infantile Paralysis. R. M. Schaeffler, Kansas City.
94 Diagnostic Procedures in Urology. C. Capell, Kansas City.
95 Intermittent Hydronephrosis. C. W. Russell, Springfield.
96 Diabetes. L. C. Ross, Springfield.
97 Hyperplasia of Thymus. Report of Case. W. H. Douglass, Benton City.
98 Quinin and Urea Hydrochlorid as Local Anesthetic in Exploratory Operations. E. D. Twyman, Independence.

90. Sprains.—The modern and correct treatment of a sprain, Shuttee says, is by proper strapping, exercise and massage. The strapping must be applied in such a manner as to envelop the injured joint completely, otherwise the requisite degree of pressure cannot be obtained which is necessary to secure compression when the parts are exercised. In this way complete and early recovery may be brought about, and the dangers greatly decreased. In addition to this, massage should be practiced every time the strapping is changed, beginning at the upper part of the swelling, the manipulation being a steady, uniform gentle movement of stroking or squeezing, directed upward from the distal part of the joint, but always commencing on the proximal side of the injury, or at the proximal limit of the swelling. The object is the emptying of distended veins and waterlogged tissues. By beginning pressure at the upper part and gradually descending in stroking much of the effusion can be pressed out at each sitting, and usually in a few days the swelling is gone. The sprained part, as already stated, should be used as soon as properly supported by adhesive plaster, and thus by muscular contraction the effused material is rapidly pressed out of the injured part.

If the patient is not seen until after great swelling has taken place, it may be best to rub the joint two or three times a day until the swelling is somewhat reduced, when the plaster should be applied. As soon as the plaster has been applied, the patient should be made to walk and in the first few attempts an assistant may be necessary partly to support him; but he should be strongly impressed with the fact that his recovery will be rapid in direct proportion to the use of the joint. The first few attempts to walk will be accompanied by some pain, and at times this will be great but it will diminish at each succeeding attempt, and soon become negligible.

New Jersey Medical Society Journal, Orange

September, XI, No. 9, pp. 431-492

- 99 Some Important Clinical Observations in Blood-Pressure Studies. P. Marvel, Atlantic City.
100 Recovery from Tuberculous Meningitis. P. A. Potter, East Orange.
101 Reduction of Infant Mortality: How Can It Best Be Accomplished? T. N. Gray, East Orange.
102 Oxyuris Vermicularis as a Carrier. F. C. Henry, Perth Amboy.

New Mexico Medical Journal, Las Cruces

September, XII, No. 6, pp. 153-182

- 103 Case of Adiposis Dolorosa. C. T. Sands, Las Cruces.
104 Case of Epilepsy Treated with Crotalin. R. E. McBride, Las Cruces.

New York Medical Journal

September 19, C, No. 12, pp. 549-596

- 105 Hemophilia and Hemophilic Arthritis. M. H. Vegas, Buenos Aires, Argentina.
106 *Pains Anomalously Distributed in Cardiovascular Disease. H. L. Elsner, Syracuse.
107 Treatment of Cancer by Electric Methods. A. F. Holding, New York.
108 *Case of Hermaphroditism. G. S. Foster, Manchester, N. H.
109 Efficiency and Quality of Life. C. A. Penrose, Baltimore.
110 Tuberculinization and Immunization. M. Fishberg, New York.
111 Treatment of Sunstroke and Heat Prostration. I. Bram, Philadelphia.
112 Dust. J. A. Guthrie, Portsmouth, Va.
113 Pulmonary Tuberculosis Complicating Operations for Appendicitis. A. C. Burnham, New York.
114 Tyrosin Crystals in Urine of Normal Pregnant Woman. J. Rosenbloom and W. E. Gardner, Pittsburgh.
September 26, No. 13, pp. 597-648
115 Modern Diagnostic Methods in Syphilis. J. A. Fordyce, New York.
116 *Medical Treatment of Intestinal Stasis. R. W. Wilcox, New York.
117 General Paralysis of Insane. H. W. Mitchell, Warren, Pa.
118 Prognosis in Acute Appendicitis. E. MacD. Stanton, Schenectady.
119 Tuberculosis Crusade: Parallel. T. J. Mays, Philadelphia.
120 Some European Clinics. R. J. Manion, Fort William, Ont.
121 Use of Scopolamin-Morphin in Labor. A. J. Rongy and S. S. Artuck, New York.
122 *Value of Abderhalden Test for Cancer. I. Levin, New York.
123 Artificial Pneumothorax in Pulmonary Tuberculosis. C. R. Kingsley, Jr., West New Brighton, Staten Island.
124 Newer Teachings Concerning Diseases of Gastro-Intestinal Tract. M. I. Knapp, New York.

106. Pains in Cardiovascular Disease.—Pain which persists in the precordial region, which is associated with irregularity of the heart, with rapid pulse or occasional shortness of breath, even without convincing physical signs, Elsner states, requires close watching and will ultimately be found dependent on some abnormality of the heart, either of its musculature or of its arterial or nerve supply. He looks with suspicion on precordial pain associated with palpitation, *without prominence of the eye*, with marked or little change in the thyroid, with or without the Graefe symptom. In the early and late stages of exophthalmic goiter, often with changes in the musculature of the heart, precordial pain may be present.

Embryonal heart sounds in the adult, with associated dyspnea and pain, are always suspicious of degenerative changes in the heart muscle associated with vascular anomalies. Valvular lesions are by no means free from precordial and referred pains. Irregular and intermittent hearts with cardiac tumult are frequently associated with pain, either in the region of the heart or at a distance. This pain often increases as hypertrophy of the organ progresses. Sudden, severe, and alarming pain the precordium, occasionally in the neck, accompanies each intermission in some cases and makes the patient conscious of a halting heart. There is a class of cases in which the blood-pressure is normal, there is pain in the precordium, anemia with numbness, vertigo, a sense of weight rather than pain in the region of the heart, no murmur, a small pulse and a rapid heart during a long period, then dyspnea, aggravated by movement of the arms, in which there is myocardial degeneration. Some cases with the heart muscle degenerated may show high blood-pressure even in their terminal stages. There is a class of myocardial degeneration associated with slight degenerative changes of a sclerotic nature in the smaller arteries of the heart, in which there are transitory dilatations of the left ventricle, giving rise to evanescent systolic murmurs. These may be associated with severe precordial distress at times, particularly if of specific origin. As the tone of the heart improves, the pains yield, the dilatation and the murmurs disappear. When these cases occur in young subjects, they are of either toxic or specific origin. If not relieved they lead to marked muscular insufficiency and frequent attacks of angina pectoris, and are often associated with aortic disease. Hysterical young women frequently complain of painful pulsation referred to the abdominal aorta in the epigastrium. The absence of expansile lateral pulsation and the bruit posteriorly must always urge against the presence of aneurysm.

Pain referred to the thorax with dyspnea, with or without physical signs, aggravated by movement of the arms upward, may be considered to be of cardiac origin in most cases, par-

ticularly if such movement increases dyspnea at the same time. Systematic blood-pressure study in almost all cases, has convinced Elsner that arteriosclerosis is not always associated with high systolic blood-pressure. While in the majority of cases arteriosclerosis is a condition with high blood-pressure, the exceptions are of sufficient frequency to demand consideration in diagnosis. Most of his cases of so-called pseudo-angina, not neuroses, proved ultimately, if in young subjects, to be due to cardiac syphilis with arterial and consecutive myocardial degeneration; in older subjects, to true angina dependent on coronary changes.

108. **Case of Hermaphroditism.**—The particular oddity of Foster's case was the presence of a well-formed testicle in close proximity to the right ovary.

116. Abstracted in *THE JOURNAL*, July 18, 1914, p. 271.

New York State Journal of Medicine

September, XIV, No. 9, pp. 429-470

- 125 *Metrorrhagia at Puberty. H. C. Coe, New York.
- 126 Splenectomy for Splenic Anemia. R. S. Fowler, Brooklyn.
- 127 Atypical Pneumonias of Infancy and Childhood. E. J. Wynkoop, Syracuse.
- 128 Pleural Lymph Flow: Causes of Its Increase and Decrease. A. H. Garvin, Ray Brook.
- 129 Surgical Diagnosis and Autopsy Findings. H. G. Weiskotten, Syracuse.
- 130 Intra-Ocular Sarcoma. W. A. Weidler, New York.
- 131 Some Sociologic Aspects of Ophthalmology. E. M. Alger, New York.
- 132 Surgery of Maxillary Antrum: External Route. S. H. Lutz, Brooklyn.
- 133 Surgery of Maxillary Antrum: Intranasal Route. L. M. Hurd, New York.
- 134 Correction of Nasal Deformities by Injection of Paraffin. H. Smith.
- 135 Diet in Health and Disease. C. C. Sutter, Rochester.
- 136 Causes of Renal Pain. E. M. Stanton, Schenectady.
- 137 Lightning Stroke. I. M. Slingerland, Fayetteville.

125. Abstracted in *THE JOURNAL*, May 30, p. 1750.

Ophthalmic Record, Chicago

September, XXIII, No. 9, pp. 433-486

- 138 Samoan Conjunctivitis. C. F. Ely, U. S. Navy.
- 139 External Canthotomy. R. S. Lamb, Washington, D. C.
- 140 Use of Snare as Final Step in Enucleation of Eye. H. R. Wright, Columbus, Ohio.

Tennessee State Medical Association Journal, Nashville

September, VII, No. 5, pp. 187-226

- 141 *Arteriosclerosis of Cerebral Vessels. J. Phillips, Cleveland.
- 142 Cancer of Uterine Cervix. J. M. Maury, Memphis.
- 143 Cancer Problem. M. Goltman, Memphis.
- 144 Local Anesthesia in Rectal Surgery. D. R. Pickens, Nashville.
- 145 Malaria and Country Practitioner—Plea for Blood Examination. H. Lockhart, Coalmount.
- 146 Case of Fracture of Base of Skull, with Unusually Good Recovery. J. B. Lackey, Ripley.

141. Abstracted in *THE JOURNAL*, May 2, p. 1428.

Wisconsin Medical Journal, Milwaukee

September, XIII, No. 4, pp. 131-174

- 147 Points of Contact in General and Orthopedic Practice. F. J. Gaenslen, Milwaukee.
- 148 Volkmann's Ischemic Paralysis. Special Reference to Nerve Involvement. C. J. Hahlegger, Watertown.
- 149 Some Aspects of Cardiorenal Disease. L. M. Warfield and R. L. Schulz, Milwaukee.
- 150 Tuberculosis of Tracheobronchial Lymph-Nodes in Childhood. G. R. Ernst, Milwaukee.
- 151 Roentgen Diagnosis of Obstruction in Alimentary Tract. P. Eisen, Chicago.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

September 12, II, No. 2802, pp. 457-492

- 1 Etiology and Treatment of Carcinoma of Tongue. W. G. Spencer.
- 2 *Method of Opening Abdomen for Appendicectomy. G. H. Edington.
- 3 *Pott's Disease in Cervical Region. Methods of Bony Splinting. A. Don.
- 4 *Diagnosis of Chronic Pulmonary Tuberculosis in Infancy and Childhood. I, D. B. Lees; II, C. Riviere, and III, W. I. Bruce.

- 5 Conditions Simulating Chronic Appendicitis. J. Morley.
- 6 *An Unusual Case of Appendicitis. E. W. M. H. Phillips.
- 7 Case of Rupture of Kidney from Slight Trauma. J. L. Atkinson.
- 8 Treatment of Acute Gonorrhea in Men. J. G. Hayes.

2. **Opening Abdomen for Appendicectomy.**—The principles underlying Edington's method are: (1) Division of the posterior sheath of the rectus transversely, in the direction of the aponeurotic fibers, and (2) preservation of the muscle itself to form a support to the scar. The method of operation consists in exposing the rectus muscle, loosening it in its sheath, retracting toward the middle line, and transverse division of the posterior sheath and peritoneum. After the appendix has been removed and the posterior sheath and peritoneum sutured, the rectus is allowed to fall back into its normal position, and the anterior sheath and superficial wound closed.

3. **Pott's Disease in Cervical Region.**—The method Don employs is to expose the spines from below the seventh cervical to above the second dorsal spine by an ordinary central incision, clear well of periosteum the seventh and under-side of second spines, and then to pack the space with gauze to arrest hemorrhage. A piece of rib long enough to stretch from the tip of the seventh spine to well over the second is quickly excised subperiosteally from a most convenient part of the chest wall next the operator. A hole is drilled in the wider (generally anterior) end of this piece, big enough to fit easily over the seventh spine, which has been cleared of periosteum to receive it. When the piece is adjusted over the seventh spine, with the convexity forward, it is then easy to mark and cut across at the point which will just fit into the groove below the second spine. A small hole for a suture is drilled in the upper end of the piece of rib, and through this a stitch of silver wire or catgut is put and a curved round needle threaded to one end of it. With the needle it is quite easy to get a good grip of the interspinous ligaments and tendons between the second and first vertebra or base of the skull and thus to fix the upper end of the splint. Much does not depend on this suture, for the muscles and fascia when sutured together over the splint in closing the wound are sufficient to hold it in good position till healing takes place. Should the second spine not be available owing to the disease being in the first or second vertebra, a length of rib is taken sufficient to be jammed against the base of the skull and fixed there as before.

4. **Chronic Pulmonary Tuberculosis in Childhood.**—The point Riviere puts forward as something new is the fact, hitherto unrecorded, that interscapular impairment as an early sign of tuberculosis of tracheobronchial glands occurs on the right side only. Evidence is collecting to point to pressure on the right pulmonary artery in which it passes in front of the bifurcation glands as the causation of these right-sided signs. The bifurcation glands are those most commonly tuberculous of all the thoracic group; they show the most extreme changes, and hence are probably the first to suffer. Hence a sign which depends on enlargement of the bifurcation glands, if subsequent research confirms this, must be of considerable value in the diagnosis of tuberculous disease in the chest.

It is an increase in size and in dulness of this area on the right side which constitutes the sign. The normal impairment becomes more marked, being often sufficient to be termed "dulness," and extends out 2 or 3 inches from the middle line. The area extends downward to the sixth, seventh, or even the eighth dorsal spine while its outer limit, mapped by percussion from without inward, forms a well-defined curved line, though the note outside it is sometimes not so good as that over corresponding parts of the opposite lung. It is interesting and important that this clear outer limit can be shown to undergo a distinct respiratory fluctuation during deep breathing. There is also present in nearly all cases slight impairment at the apex of the lung, both front and back, with some diminution of the area of apical resonance as described by Kroenig.

6. **Unusual Case of Appendicitis.**—Phillips cites the case of a collier who was suddenly seized with abdominal pain of such severity as to necessitate the administration of chloro-

form. On the following day the patient complained of sharp, continuous pain situated under the heart and in the upper part of the abdomen, of obstinate constipation, and of vomiting of clear green fluid. In 1887 he had a similar pain which lasted five days; it came on after a fall from a tree. On five occasions since then he had suffered from the same pain, of greater or less severity, the attacks lasting five or six days.

His face was pale and typically hippocratic and covered with beads of perspiration. The tongue was clean, the pulse was 78, and the temperature 96.8 F. The abdomen was not distended. The respiratory movements were good, but better on the right side than on the left. Superficial and deep epigastric tenderness were present, and there was a zone of hyperesthesia in the left hypochondrium. There was deep tenderness on pressure over the left kidney region posteriorly. The whole of the left side was tympanitic. The liver dulness was normal. The apex of the left lung showed some apical retraction, Kronig's sign being present, and there was some impairment of breath sounds. There was a slight systolic murmur at the apex of the heart, conducted out to the axilla. The urine was normal. There was slight leukocytosis. Loewi's adrenalin mydriasis test was applied with a view to determine the possible presence of pancreatitis. The result was negative. There was nothing definitely indicative of perforation of a peptic ulcer. Repeated enemias were unavailing.

The patient appeared to improve slightly, but in about eight hours he suddenly became much worse; the temperature fell to 96; the pulse went up to 102, and became very thin. He was now evidently moribund. Operation was out of the question and in a few hours the patient died, evidently of shock.

At the post-mortem examination the cecum and ascending colon were enormously distended and hyperemic. This part of the gut was freely movable, and had a large mesentery. It lay looped between the hepatic and splenic flexures, below the transverse colon and great omentum, and suspended on the left to the cardiac end of a dilated stomach, by the tip, middle and mesentery of a long recurved appendix. The appendix when unravelled, was 9½ inches long, was full of hard concretions, and was gangrenous at its tip. The tip was densely adherent to the greater curvature of the stomach on the left side, and by fine adhesions to the spleen. The right iliac fossa was occupied by coils of small intestine.

Journal of State Medicine, London

September, XXII, No. 9, pp. 513-576

- 9 Thirty Years in History of Tetanus. L. Vaillard.
- 10 State Medicine Problems of Coming Ten Years. W. L. MacKenzie.
- 11 Public Health Crusade. W. P. Paterson.
- 12 Value of Incubation Test in Examination of Water and Other Products. S. Delépine.

Journal Tropical Medicine and Hygiene, London

September 1, XVII, No. 17, pp. 257-272

- 13 Tinea Capitis Tropicalis in Anglo-Egyptian Sudan. A. J. Chalmers and A. Marshall.

Lancet, London

September 12, II, No. 4750, pp. 683-730

- 14 Dysentery (To be continued.) F. M. Sandwith.
- 15 Principles Which Govern Ultimate Results of Hare-Lip and Cleft-Palate Operations. G. V. I. Brown.
- 16 *Cases of Recovery from Detachment of Retina. C. Higgins.
- 17 *Persistent Low Arterial Blood-Pressure in Carcinoma of Tongue with Amyloid Disease. H. D. Rolleston.
- 18 Case of Ganglion of Ring Finger. M. C. S. Lawrence.
- 19 Family History of Polydactylism. A. B. Raffle.

16. Recovery from Detachment of Retina.—The three cases cited by Higgins are examples of a disease the treatment of which leaves much to be desired, and so far as results are concerned is no better now than it was many years ago. All operative treatment is, in Higgins' experience, worse than useless. He has never seen a case in any way benefited by any of the operations that have been recommended, but has seen some which have been made worse. The treatment that seems to hold out the best, if only a slight, hope of cure is by rest in the horizontal position continued for weeks, and measures which may be supposed to cause removal of fluids—such as sweating, purgation, absorbents, and abstinence from fluid nourishment, as far as it is possible to live without it.

17. Low Blood-Pressure in Carcinoma of Tongue with Amyloid Disease.—The persistent low arterial blood-pressure in Rolleston's case he believes was due to the general asthenia and the amyloid disease, and is unique in his experience, as he has not seen a blood-pressure as low as 70 mm. Hg except in cases of advanced Addison's disease and in cardiac failure shortly before death. In otherwise healthy persons during the fever of pneumonia, Rolleston has seen a systolic blood-pressure of 80 mm. Hg. The diastolic blood-pressure taken by the auscultatory method ten days before the final collapse, was 35 mm. Hg with the normal difference of 30 mm. between the systolic and diastolic pressure.

The tongue in this case was extensively involved by carcinoma, the anterior portion being much eroded and the organ practically fixed. At the back the growth had extended to the left anterior pillar of the fauces and to the soft palate. The condition was quite inoperable. There was some slight enlargement of the cervical glands, but these did not increase in size. The heart was normal. There was general bronchitis on admission but this cleared up, though there were often some rhonchi over the root of the right lung. There was constantly albuminuria associated with edema of the feet, at first transient and mainly after the patient had been up, and slight purpura on the hands. The specific gravity of the urine varied from 1.002 to 1.022. Casts were not found. There was never any fever, relatively little pain and weight was remarkably maintained. The liver and spleen were never found to be enlarged. In June edema of the legs became more prominent and the albuminuria increased. In July there was not much change until the seventeenth, when he collapsed and was in great pain. The right leg became livid and cold. He died the next day.

Practitioner, London

September, XCIII, No. 3, pp. 301-444

- 20 Chronic General Periodontitis. J. F. Colyer.
- 21 Mental Deficiency Act as It Affects Practitioner. A. F. Tredgold.
- 22 *Occurrence of Bilateral Extensor Response in States of Unconsciousness. C. O. Hawthorne.
- 23 Psoriasis. G. Pernet.
- 24 Diathermy and Its Use in Surgery. E. P. Cumberbatch.
- 25 Relation of Tuberculosis to Other Diseases Including Pregnancy. H. L. Tidy.
- 26 Otorrhea. H. L. Whale.
- 27 Ophthalmia Neonatorum. S. Stephenson.
- 28 Summer Diarrhea. L. Mandel.
- 29 Scarlet Fever. C. B. Ker.
- 30 Recent Public Health Work. J. Priestley.
- 31 Pink-Eye. C. H. Brown.

22. Bilateral Extensor Response.—The summary of Hawthorne's preliminary statement is, (1) that, as an extensor response may be present during sleep, after an epileptic convulsion, under the influence of certain drugs, and in association with the peripheral irritation of chronic joint diseases, it must be accepted that the conditions necessary for such a response may be provided by non-organic modifications of the central nervous system; (2) that unconsciousness may possibly be one of these modifications, and (3) that the existence of the extensor response in sleep, and in the stupor of exhaustion which follows an epileptic fit, renders the second of these propositions not improbable.

Journal de Médecine de Bordeaux

August 2, LXXXV, No. 31, pp. 515-530

- 32 Technic for Intravenous Injections of Neosalvarsan. Joulia.
- 33 *Serotherapy of Tuberculosis. (Un mot sur la sérothérapie anti-tuberculeuse.) Grasseteau.

33. Serotherapy of Tuberculosis.—Grasseteau states that the tubercle bacilli become modified in the course of tuberculosis in the human body and thus the toxins they secrete change at different periods. It follows that antitoxins useful at one period lose their power at other stages of the disease. The success of diphtheria antitoxin is due to the fact that diphtheria is an acute and rapid disease which runs its course so swiftly that the bacilli have only one stage of development and secretion. It is very different with tuberculosis, and animals immunized by injection of tubercle bacilli have in their serum only the antibodies generated to combat the

first stage of the tubercle bacilli's evolution. Their serum consequently has no antitoxic properties except for the toxin of this first stage. It seems foolish to try to produce antitoxin by injecting tubercle bacilli or tuberculin as the antibodies to each thus are always the same and very limited in their action. Natural toxins should be used to generate antitoxin, he insists, and they should be taken from the serum of animals at different stages of the disease. By injecting serum from such animals into other animals, known to be more or less immunized, we may perhaps cause the development in their serum of complete antitoxins. In short, he reiterates in conclusion, it is probably only by injecting natural toxins from different stages of the disease that we can succeed in obtaining an antitoxin for tuberculosis that will cover the whole scale of the toxins generated in the long course of tuberculosis.

Beiträge zur klinischen Chirurgie, Tübingen

July, XCIII, No. 1, pp. 1-222

- 34 Typical Disease of Upper Epiphysis of the Femur. E. Schwarz.
- 35 Fascia Flap in Treatment of Ankylosis of the Lower Jaw. (Operative Behandlung der wahren Unterkieferankylosen.) P. Kornew.
- 36 Etiology of Gastric and Duodenal Ulcers. F. Bode.
- 37 Metastasis of Goiter Tissue. (Strumametastasen.) E. Crone.
- 38 Operative Treatment of Primary Cancer of the Liver. (Lebercarcinom.) E. Bundschuh.
- 39 Operative Correction of Vulvar Anus. J. Weiss.
- 40 Actinomycotic General Infection, with Metastases. H. Kolaczek.
- 41 Exclusion of the Pylorus. F. v. Tappeiner.
- 42 Recurring Hernia. R. Welzel.
- 43 Dislocation of the Metatarsus. (Luxationen im Lisfranc'schen Gelenk.) T. Herrmann.
- 44 Laceration of Bronchus from Contusion. (Subkutane Bronchuszerreissung.) J. Vierheilig.

Berliner klinische Wochenschrift

August 31, LI, No. 35, pp. 1589-1604

- 45 *Cancer on Hand Consecutive to Battle Wound. (Handkrebs als Spätfolge einer Kriegswunde?) H. Coenen.
- 46 The Blood-Picture with the Intracutaneous Tuberculin Reaction with Various Technics. (Das cytologische Bild der Intracutanreaktionen mit den Deycke-Much'schen Partialantigenen der Tuberkelbacillen und dem Alttuberkulin.) T. Kohrs.
- 47 *Brachial Neuralgia; Eight Cases. O. B. Meyer.
- 48 *Signs of Apical Disease. (Zur Diagnostik der Erkrankungen der Lungenspitzen.) R. Ehrmann.
- 49 Diagram Showing the Plan of Arrangements for Caring for the Wounded in War. (Skizze des Kriegssanitätsdienstes.)

45. Tardy Results of Wounds in War.—Coenen remarks that not much has been published on the tardy results of injury received in war, but the scar is liable to become the seat of a cancer late in life. This happened in a case he reports in detail, a cancer developing in 1913 in the scar on the back of the hand injured in a bomb explosion in 1896. The man emerged otherwise unscathed from three campaigns to have his arm amputated at 74. Coenen knows of five other cases of cancer on the back of the hand consecutive to trauma or irritation of a wart. Cancer of the palm is rare. Michael, who has compiled sixty-four cases of cancer on the back of the hand, could find only three in which cancer had developed in the palm of the hand, but Grawitz has encountered two since then in young farm-hands. Coenen comments on the frequency of wounds of the hand in modern warfare; he had 104 cases in his charge during the first Balkan War and forty-two in the second. The injury was generally extensive and jagged and usually on the back of the hand, so that cancerous degeneration later in life must be reckoned with as a possible aftermath of war.

47. Brachial Neuralgia.—Meyer reports some cases of brachial neuralgia in which throwing the head back, as in shaving, starts pain in the arm or increases it if already present. This pain in shaving runs from the back of the neck down into the arm. In one typical case with this symptom he succeeded in partially arresting the neuralgia by a paravertebral injection of cocain to reach the root of the nerve, and completed the cure by a peripheral injection of alcohol to block the posterior inferior cutaneous brachial nerve just above the elbow, as the remaining pain was mainly along this nerve. It disappeared for about a year and then returned, but subsided again after two injections, first with a local anesthetic, the second with alcohol. He has had similar

experiences in other cases of brachial neuralgia and sciatica in which, after injection of salt solution on the root of the nerve had arrested part of the neuralgia, the cure was completed by a peripheral injection of alcohol. In three of seven cases of brachial neuralgia the above "shaving sign" was pronounced. The pain in the arm and shoulder is sharper when, as the head is thrown back, it is bent over a little toward the sound side. This sign does not occur with pain in the arm of other origin. With obstinate or especially severe brachial neuralgia the region should be examined with the Roentgen rays to discover any new growth in or near the cervical vertebrae or plexus or cervical ribs. His experience has thus been very favorable with paravertebral, epidural injections in the neck, supplemented by a peripheral injection of alcohol. The latter should be tried first as it might answer the purpose alone.

48. Diagnosis of Apical Disease.—Ehrmann relates that the percussion findings differed on the two sides and an apical process seemed beyond question in two cases in which necropsy revealed that the apices were entirely sound and that there was nothing abnormal but adhesions in the pleura. Similar areas of dullness were found in four of twenty-three cadavers and yet the lungs were sound; but there were adhesions in the pleura.

Ehrmann found further that in patients with an apical affection a dose of atropin rendered more distinct the difference between the pupils which is characteristic of apical trouble. The muscle dilating the pupil is more irritable, and this is effectively shown up by paralyzing the oculomotor muscle with atropin or belladonna by the mouth. He has the patient take from 5 to 15 drops of a 0.1 per cent. solution of atropin on a lump of sugar, and examines the pupil every fifteen minutes. By instillation into the eye it is by no means so effectual, but cocain by the mouth or subcutaneously answers the same purpose.

Medizinische Klinik, Berlin

August 30, X, No. 35, pp. 1421-1440

- 50 Battle-Field Surgery. (Chirurgie im Felde.) A. Köhler. To be continued.
- 51 *Prophylaxis of Cholera. F. Rosenthal.
- 52 Treatment of Club-Foot by General Practitioner. (Die Klumpfußbehandlung in der Praxis.) G. Magnus.
- 53 *Medicated Vaginal Douches During Pregnancy and Parturition. (Ueber medikamentöse Scheidenspülungen bei schwangeren Frauen und während der Geburt.) E. Zweifel.
- 54 Inversion of Uterus; Two Cases. (Prolapsus uteri inversi.) G. de Rossignoli.

51. Prophylaxis of Cholera.—Rosenthal discusses the danger of the introduction of cholera into western Europe by the Russian troops as prisoners or by the occupation of cholera-infested towns by the Germans, and he deplores the fact that serum prophylaxis of cholera is far from being as effectual as vaccination against small-pox. It is impossible to immunize troops in the field with it, as the serum induces high fever and there is a negative phase for a few days. The quarantine measures and supervision of rivers which have been successful in keeping out cholera in the past are nullified by the conditions of war, but each person can effectually protect himself against cholera by extreme cleanliness and avoiding unboiled water and uncooked foods. The most important general prophylactic measure is the isolation of the sick. The disease starts almost always with diarrhea, and although the patient may still feel quite well yet he is already scattering germs in his diarrhetic stools. A soldier with profuse diarrhea should go at once to the hospital and stay there. Even before it is possible for bacteriologic examination of the stools, the leukocyte count and blood-picture may reveal the presence of cholera infection and permit the discharge of the men with ordinary harmless diarrhea.

Even direct exposure to cholera does not necessarily entail the disease unless the system is depressed from any cause, and he urges for this reason restriction of the sale and use of liquor, avoidance of physical excesses, raw fruit, etc. Before eating and especially before preparing food the hands should be thoroughly cleansed with soap and water. The face and particularly the mouth should not be touched by the hands. All fluids should be boiled before drinking, except beer, wine

and natural mineral waters. If water has to be taken raw, the danger of infection can be materially reduced, he says, by adding a little acid, a knife-tip of citric acid to half a liter, or 20 drops of liquid phosphoric acid. The army corps should have a supply of each. He insists that it is unnecessary to use a disinfectant for the hands, and that spraying the rooms and clothes with a solution of phenol does no good whatever and merely serves to lull into false security. Disinfectants are of no use for the desired purpose except in the privies, and even here milk of lime is preferable to phenol. The linen and the dejecta from the sick require of course thorough sterilization. There is no transmission of cholera, typhus or dysentery through the air. In Bulgaria he used to see persons extremely punctilious in singeing their dishes with alcohol and toasting all their bread, and yet they would eat raw fruit and drink unboiled water.

53. **Vaginal Douches in Pregnancy and Parturition.**—Zweifel says that the consensus of opinion seems to be that in normal conditions vaginal douches are superfluous. With a pathologic secretion and the date of the expected delivery over ten days away, he advocates vaginal douches with a 0.5 per cent. solution of lactic acid, according to Schweitzer's practice. A daily douche is given, boiling all the instruments beforehand each time. If delivery is impending, he advises mechanical cleansing of the vagina with 1 or 2 liters of saline. This is followed by injection of 100 or 200 c.c. of a 1 to 2,000 solution of mercuric chlorid. This can be repeated after twelve or twenty-four hours, repeating it each morning. There is danger of poisoning from the mercury if larger amounts are used. A solution of silver nitrate might be used, or the vagina wiped out with tincture of iodine. He has had puerperal fever develop in only one of the fourteen pregnant women with pathologic secretion treated in this way, that is, in 7.1 per cent.

Münchener medizinische Wochenschrift, Berlin

August 4, LXI, No. 31, pp. 1713-1768

- 55 *Improved Methods for Repeated Physical-Chemical Examination of Blood. (Untersuchungen von Blutseris.) J. Traube.
- 56 Depth of Biologic Action of Radiant Energy. (Biologische Reichweite der Radium-Mesothorium- und Röntgenstrahlen.) B. Krönig.
- 57 *Changes in Technic for Roentgen Treatment of Cancer. (Wandlungen in der Krebsbehandlung mit Röntgenstrahlen.) J. A. Amann.
- 58 *Colloidal Nitrogen in Urine as Aid in Differentiation of Cancer. (Der kolloidale Stickstoff des Harns und seine Bedeutung für die klinische Karzinomdiagnostik.) P. L. J. de Bloeme, S. P. Swart and A. J. L. Terwen.
- 59 *Kidney Disease in Children. (Nierenerkrankung im Kindesalter.) C. T. Noeggerath and H. Zondek.
- 60 Hyperleukocytosis from Action of Cold. A. Rovighi and R. Secchi.
- 61 Diathermia in Ophthalmology. F. Best.
- 62 Misleading Roentgen Findings with Cancer in Body of Stomach. (Diagnostische Eigentümlichkeiten der Karzinome des Magencörpers.) H. L. Baum.
- 63 Resection of Duodenum with Papilla for Cancer. G. Hirschel.
- 64 *Hour-Glass Stomach with Ulcer. (Sanduhrmagen bei nicht tiefgreifendem Ulcus ventriculi.) W. Nonnenbruch.
- 65 Radiotherapy from the Surface for Deep Cancer. (Heilung tiefliegender Karzinome durch Röntgenbestrahlung von der Körperoberfläche aus.) G. Schwarz.
- 66 Emetin in Lambliia Dysentery. M. Mayer.
- 67 *Pancreas Disease. (Fortschritte in der Pathologie und Therapie der Pankreaserkrankungen.) A. Schmidt.

August 11, No. 32, pp. 1769-1800

- 68 Why Hemorrhoids Develop. (Entstehung der Hämorrhoiden.) A. Schmincke.
- 69 Standard Technic for Taking the Temperature. (Notwendigkeit einer einheitlichen Temperaturmessung: Grenze zwischen normalen und pathologischen Temperaturen.) L. Saathoff.
- 70 Sex and Narcotics as Influencing Serodiagnosis. (Zur Frage der Geschlechtsspezifität der Abwehrreaktionen bei Abwehrfermenten und über die Beeinflussung der Abbauvorgänge durch Narkotika.) E. Wegener.
- 71 Distribution of Fat, Lecithin and Wax-Splitting Ferments in the Organs. A. E. Porter.
- 72 *Compressor Instrument for Utilization of the Movability of the Skin of the Abdomen in Roentgenotherapy. (Zur Technik der gynäkologischen Röntgentherapie.) D. Chilaidditi.
- 73 The Ionometer for Dosage in Roentgen Work. H. Greinacher.
- 74 Red Light in Roentgen Work. (Ein kleiner Vorteil beim Durchleuchten mit Röntgenstrahlen.) R. Geigel.
- 75 Operation Plus Radiotherapy. (Operation oder Bestrahlung.) L. Heidenhain. Concluded in No. 33.
- 76 Treatment of Gunshot Wounds. (Behandlung der Schusswunden im allgemeinen.) O. v. Angerer.

- 77 Surgery at the Front. (Kriegschirurgische Arbeit auf dem Hauptverbandplatz.) L. Schliep.
- 78 Arrangement of Field Hospitals. (Anordnung der Verbandplätze im Feld.) Schoenwerth.
- August 18, No. 33, pp. 1801-1832
- 79 *Action on Syphilis in the Fetus from Salvarsan Given the Mother. E. Meyer.
- 80 Artificially Produced Gamma Rays. (Die technisch erzeugte Gamma Strahlung. II.) F. Dessauer.
- 81 Non Diphtherie Stenosis of the Trachea in Children; Two Cases, One Fatal. E. Köck.
- 82 *Recurring Colic in Umbilical Region in Children. P. Tobias.
- 83 Toxic By-Effects of Embarin. (Toxische Nebenerscheinungen des Embarin.) A. Pasini.
- 84 Esophagothermia in Treatment of Stenosis. (Heizbare Oesophagussonde zur Behandlung von Stenosen.) W. Sternberg.
- 85 Medical Legal Decisions. (Der Arzt in der Rechtsprechung. VII.) P. Kaestner.
- 86 Treatment of Frontal Sinusitis. (Stirnhöhleneiterungen.) E. Wunckler.
- 87 *Treatment of Gunshot Abdominal Wounds in War. E. Payr.
- 88 Orthopedics at the Front. F. Lange.
- 89 *Gunshot Wound of the Heart. (Blutender Herzschuss durch Naht und Muskelimplantation geheilt.) A. T. Jurasz.
- 90 The Service in a Field Hospital. (Der Dienstbetrieb bei einem Feldlazarett.) v. Reitz.
- 91 *The Wounded in the Various Wars Since 1850. (Kriegssanitätsstatistik.) Schwiening.

55. **Research on the Blood.**—Traube thinks that the physico-chemical properties of the blood-serum have not been investigated to the full, and here reports the results of his own research in this line opening up a promising field for diagnostic deduction. The alkalinity he determines by application of a new and simple principle: The stalagmometer shows about the same number of drops with a 0.2 per cent. solution of quinin hydrochlorid as with water; namely, at 18 C., 49.9 with water and 50.3 with quinin solution. But if a minute quantity of an alkaline solution is added, the number of drops increases in proportion. The same principle can be applied to the serum to determine the acidity. If a stronger acid is added to a 2 per cent. solution of sodium isovalerate, the capillary action of the valerianic acid is reduced and the number of drops increased. These tests are extremely simple. All that is necessary to determine the acidity of the serum is to add 0.2 c.c. of the serum to 5 c.c. of an aqueous solution of 2 per cent. sodium isovalerate, and then note the difference in the number of drops it forms. Or the test can be applied by adding to 1 c.c. of serum, mixed with 9 c.c. water, 4 c.c. 1/100 normal sulphuric acid.

He found that guinea-pig serum containing complement had by far the least viscosity, the least alkalinity and the least capillary action—all tending to show, he says, that the complement properties of a serum are the expression of physical causes. In testing several hundred human serums it was found that with the quinin test (10 c.c. of a 0.2 per cent. solution of quinin hydrochlorid to 0.2 c.c. serum) normal serum behaved like a 0.05 or 0.06 normal solution of potassium hydroxid. With cancer or other cause for cachexia, the alkalinity becomes much reduced. The findings paralleled always the meiostagmin reaction so closely that he thinks the latter is merely an index of the degree of alkalinity and cachexia. The practical value of the research is shown in such cases as when viscosity of 237 is found with a supposed heart neurosis. This finding indicates unfailingly that the trouble is certainly more than a mere simple neurosis. The tests are so simple that any practitioner can apply them and thus throw light on many puzzling cases.

57. **Roentgen Therapy of Cancer.**—Amann states that he has applied Roentgen therapy in 52 cases of uterine cancer. In the 31 absolutely inoperable cases of cancer of the cervix, 5 of the patients were completely or nearly cured, 29 per cent. thus being restored to health when they had been absolutely doomed before. The improved technic accomplishes this, besides, without danger of Roentgen burns even with the far more intensive dosage, while the action on the cancer cells is more destructive. But it is indispensable to recognize and utilize the facts that only certain types of rays are the biologically effectual and harmless ones, and that different tubes and apparatus and even the same tube under different conditions generate entirely different rays. The electroscope permits these different rays to be distinguished

and intensive dosage, he emphasizes, should never be applied without preliminary electroscope tests. When the rays are applied both from front and back to act on an advanced cancer of the cervix, they act on the entire region, all the lymph-glands and adjacent tissues feeling the effect, and thus a more thorough clearing out of the malignant disease is possible, he declares, than could even be realized by operative measures. In one case he had removed a cancer of the cervix three years before and a recurring tumor a year later. Again a tumor as large as a fist developed in the pelvic connective tissue but this was treated with intensive Roentgen exposures and a complete cure followed. The sciatica-like pains and the contracture of the foot from pressure on the nerves vanished and the patient gained in weight. She was in good health for a long time but died suddenly later without recurrence of pelvic trouble. Amann's experience has been so favorable that he thinks the improved technic for Roentgen therapy might be applied even in operable cases.

58. Colloidal Nitrogen in the Urine.—This communication from Amsterdam reports tests with the Salkowski-Tojo method the results of which have shown that the original technic does not distinguish with any constancy between normal and cancer urine. But by determining the dialyzable element alone; that is, exclusively the actual colloidal nitrogen in the narrowest sense, a marked difference is apparent between normal and cancer urine. Thus the Kojo-technic nitrogen, the writers conclude, is nothing specific, but its non-dialyzing constituents were only 4.69 to 5.57 in three healthy persons and 7.56 in a patient with pernicious anemia but ranged from 10.74 to 38.64 in four cancer cases, the largest figures being with cancer of the larynx. (Compare with editorial in THE JOURNAL, Sept. 6, 1913, p. 778.)

59. Kidney Disease in Children.—Noeggerath and Zondek have applied to six children with nephritis and several healthy controls the functional tests and recorded the metabolic findings thereafter, keeping up the tests for several weeks with daily comparison of the intake of salt, nitrogen and water with the elimination through the kidneys. At regular intervals the residual nitrogen was also determined and the salt content of the blood. They do not know of any similar extensive research on children. The practical consequences for effectual treatment have proved useful and illuminating beyond all anticipations and they urge the general practitioner to apply this individualizing treatment of nephritis in children if he can have the chemical tests made for him in some convenient laboratory. The first thing is to put the child on a standard diet: for a boy of 10 weighing 28.8 kg. this may consist of 500 c.c. milk; 50 c.c. sugar; 50 gm. unsalted bread; 10 gm. unsalted butter; 100 gm. potatoes; 80 gm. carrots; 80 gm. apple; 250 c.c. tea; 100 c.c. coffee; 400 c.c. water, and 15 c.c. lemon juice. This totals 1,121 salt; 26.04 albumin; 1,061 water, and represents in all 1,436 calories. (A liter of milk represents in comparison only 670 calories with 1.6 salt and 3.2 albumin.) The tests were made by superposing on this standard ration varying amounts of salt—from 1 to 3, or at most 5 gm. a day—and varying amounts of a commercial food representing 67.4 per cent. albumin, 0.2 per cent. salt and no extractives. This was given up to a dose of 100 gm., mixed with the warm dishes. The fluctuations in the output of salt were as apparent with small amounts of salt as with larger ones.

This research has demonstrated once and for all that the albumin content and the sediment of the urine are far from reliable criteria as to the functional capacity of a child's kidneys. They may be apparently normal while yet the child is unable to tolerate the salt and albumin of the ordinary diet for his age. It sometimes happens that the tolerance for salt becomes upset when albumin beyond what he can tolerate is being taken, or vice versa. In one child palpable edema developed when an excess of albumin was being taken, and it could be banished and recalled at will by varying the albumin from 30 to 85 gm. a day. This happened regularly even after all traces of albumin and sediment had disappeared from the urine. The kidney trouble in this case had followed diphtheria in a boy of 10. As the child recovered from his nephritis this albumin-induced edema disappeared.

One child of 3 with severe uremia and hemorrhagic disease of the kidney was unable to tolerate any salt or albumin and he was tided along past this dangerous stage by being fed exclusively for nine days with sugar. He was given grape sugar at first and then beet sugar, 250 gm. a day, in the form of raspberry syrup. The stools kept good. This supplied ample calories for a weight from 11.6 to 13.7 kg. When the child lost his appetite for this, he was fed exclusively for sixteen days with breast milk drawn and mixed with a little oatmeal gruel to make it taste better. Breast milk contains so little salt and albumin that it can be used in this way to great advantage at times for young children past the nursing age. This little patient was treated besides with venesection, digitalis, diuretics and sweating on the electric pad. With this course of treatment the edema and uremia rapidly subsided. The urine ran up from 150 gm. to a liter in eleven days and the child was not only cured but passed through a severe purulent otitis media six weeks later without any signs of functional derangement in the kidneys under the most searching functional tests. In one case of orthostatic albuminuria these tests showed that there was some functional disturbance.

64. Hour-Glass Stomach with Gastric Ulcer.—In the two cases described the ulcer healed under medical treatment and with this the hour-glass shape disappeared and normal outlines were restored. The contracture was thus purely functional.

67. Disease of the Pancreas.—Schmidt reviews our knowledge to date in respect to pancreas functioning and derangement, concluding with the statement that everything tends to show that the internal and the external secretion of the pancreas are widely independent of each other. No anatomic basis has yet been discovered for disturbance in the internal secretion and consequently glycosuria alone cannot be accepted for the anatomic diagnosis unless there are other signs of derangement in pancreas functioning. Aberrant islands of Langerhans in the intestinal mucosa, on the other hand, might ward off glycosuria even with complete degeneration of the entire pancreas.

72. Improved Technic for Roentgen Work.—A little compressor is illustrated which is used to push over automatically and hold the skin of the abdomen. This makes it possible to expose different areas of the skin without moving the Roentgen tube or the abdomen in applying intensive Roentgen treatment to cancer in the intestines or pelvis. The compressor is of woven catgut, like a tennis racket, and is mounted on an adjustable standard.

79. Action on Fetus of Salvarsan Given Mothers.—Meyer cites Sauvage's statement that only 25.46 per cent. living children were born to 217 women with evidences of recent syphilis treated systematically with mercury and iodid, and 10.18 per cent. of the living had signs of syphilis. Meyer then tabulates similar experiences from seventeen clinics to show what can be accomplished with salvarsan under similar conditions. The proportion of children born living was from 86 to 100 per cent. In Meyer's own experience 97.4 per cent. were born living and 86 per cent. were living by the tenth day; 15.8 per cent. of the children had a positive Wassermann. The arsenic content of the placenta corresponds to the arsenic content of the mother's blood but the sound placenta does not allow arsenic to pass. The salvarsan affects the fetus favorably by its curative action on the mother and especially by preventing disease of the placenta. Pregnant women bear salvarsan well; abortion or hemorrhage is not brought on even by intravenous injection.

82. Recurring Umbilical Colic in Children.—Tobias has had several cases of this trouble in children like that described recently by Moro and Küttner. Tobias does not accept the explanation advanced by others but thinks the disturbances are caused by the preliminary stages of incipient ulceration in stomach or duodenum; that is, the pains are the result of cramps in the vascular system of these organs. Pallor and syncope frequently accompany the colic and confirm the angiospastic condition. The beneficial influence of belladonna or atropin is further corroboration. Measures

which act by suggestion tend to reduce the nervous excitability. Tobias's assumption is further sustained by the fact that two of the children, aged 10 and 13, developed the classic symptoms of gastric ulcer a few years later, but were cured by the usual medical and dietetic measures. (See Abstract 51, p. 1126, *THE JOURNAL*, April 4, 1914.)

87. Treatment of Gunshot Abdominal Wounds.—Payr has found that the holes made by a small bullet are liable to close up spontaneously but that the blood and fecal matters which escape through the holes at first gradually work their way downward into the small pelvis and are not absorbed, as the collection is generally infected from fecal matter. The consequence is often that an abscess forms here in the small pelvis. He has witnessed this repeatedly after perforation of a gastric or duodenal ulcer; all seems to be going well for a time but then the abscess forms and the walling-off adhesions are broken down and secondary peritonitis results. It usually proves extremely serious, with an unfavorable prognosis. He advocates therefore means to render harmless the infected extravasated blood from a gunshot wound of the abdomen, and suggests two ways in which this can be done. When the patient is seen in the first twenty-four or forty-eight hours he advises making a very small laparotomy incision above the symphysis, under local anesthesia; the incision only large enough to permit the introduction of a rubber drain the size of one's finger, carrying it down into the small pelvis and having the patient keep in a half-sitting position or lie on his side afterward. When not seen until later than this, the space between the rectum and the bladder must be carefully examined through the rectum. If there is any tenderness, protrusion, tenesmus or difficulty in micturition, he advises to open up the region at once. If the swelling is circumscribed, the incision can be made in the rectal wall for the evacuation of the extravasated blood. If no circumscribed swelling can be discovered, but the whole region seems swollen and very painful, indicating peritonitis in the small pelvis already installed and beginning to spread, he advises a parasacral operation. The coccyx had better be enucleated, the rectum exposed and the anterior reflection of the peritoneum incised. The drain introduced into the small pelvis should be held with a stitch, the wound left open and lightly tamponed. Treatment on these principles has rendered him excellent service in many forms of peritonitis after injury and perforation of abdominal organs, and he thinks the technic will be found useful also for the bullet wounds in war.

89. Muscle Flap to Patch a Heart Wound.—Jurasz reports a case of attempted suicide by a man of 34, the bullet passing through the left ventricle, making a jagged wound. The hole where the bullet emerged was readily sutured but the other kept up bleeding until finally a small piece of muscle tissue taken from nearby was sutured over the hole. It arrested the bleeding at once. The pericardium was rinsed out with saline until no more clots came away. The pleura contained many clots which were cleared out and a wound in the lung sutured, the pleura also being copiously rinsed out with saline until no more clots came away. There was slight fever, not over 38 C., the first two weeks and the tenth day an extensive sterile serous effusion in the pleura was siphoned out. The pulse all the time was slow, regular and strong. Examined eight weeks later there was no dilatation of the heart or pathologic murmurs and the health seemed to be perfect. When first seen there was no suspicion that the heart had been injured as the course of the bullet seemed against this assumption and the bleeding seemed to come altogether from the lung. The absence of infection he ascribes to his copious rinsing out of the pericardium and pleura.

91. The Morbidity and Mortality in the Wars of the Last Sixty Years.—In an interesting table are shown statistics relating to the twelve wars that have been waged since 1854, beginning with the Crimean War: The duration of this was twenty-eight months; forces engaged, 97,864 British and 309,268 French; with morbidity of respectively, 1,475.4 per thousand and 1,168.8 per thousand and mortality of 179.6 and 191.7; killed in battle, 28.2 and 26.7 per thousand; wounded, 186.8 and 128.9 per thousand, and died of wounds, 18.9 and

32.1. The total mortality was thus 226.7 and 250.4 per thousand. None of the other wars since approached this mortality. The total mortality among the Germans in the Franco-Prussian war is stated as 18.2 per thousand from disease and from wounds 34.7, during the twelve months of the war. The force numbered 815,000. In the Russian-Japanese war of 1904-5 the Russians lost from disease 13.3, and from wounds 48.6 per thousand and the Japanese, respectively, 41.8 and 90.6. The progress of surgical and medical science is shown by the constantly lowering percentage of the wounded who die from their wounds. This is stated as having been 24.9 among the French in the Crimean war; 11.1 among the Germans in the Franco-Prussian war, 1870-1; in the Russo-Japanese war, 6.8 per cent. among the Japanese and 3.2 per cent. among the Russians.

Zentralblatt für Chirurgie, Leipsic

August 29, *XLI*, No. 35, pp. 1409-1432

92 *Paravertebral Anesthesia in the Service of Gall-Stone Surgery. A. T. Jurasz.

93 *In Operating on Varicose Veins. R. Gutzeit.

92. Paravertebral Anesthesia.—Jurasz calls attention to the advantages of this method of nerve-blocking for gall-stone operations when general anesthesia is contra-indicated for any cause. He reports two cases in which it answered the purpose perfectly, no further anesthetic being required for the skin or peritoneum. The patients were debilitated women of 39 and 73 with much dilated hearts. He injected 5 c.c. of a 1 per cent. solution of novocain on one side at each segment of the spine from the sixth dorsal to the first lumbar, a total of about 40 c.c. In ten minutes the anesthesia was complete and the abdominal walls had relaxed. There was no pain when the bile duct was opened and gall-bladder removed. There was no operative shock in either case; the pulse was weak to start with but did not grow any weaker. The anesthetic is injected with a long fine needle on a level with the tip of the spinous process, and the lower margin of the transverse process is sought with the needle and close to it, just below, the needle is pushed in $\frac{1}{2}$ to 1 cm. deeper, pointed a little more toward the median line, pushing the tip in cautiously until the patient feels a pain radiating forward. Then 5 c.c. of the fluid is deposited here and by the end of a minute there is no further pain. He leaves the needle in place and takes another for the next injection, using the first again for the third injection, and so on. As the technic is rather tedious and as the patient has to stand the brief pain when each nerve is reached in turn, the method is not adapted for general use, but may have life-saving value in cases in which general anesthesia is contra-indicated.

93. Improved Technic for Operations on Varicose Veins.—Gutzeit has the shaved leg rubbed with alcohol and then traces with a blue indelible pencil the course of the veins in question. When the leg is dry it is painted all over with 5 per cent. tincture of iodine. The veins then all stand out black on the brown background and show up plainly even when the region is covered with blood.

Zentralblatt für Gynäkologie, Leipsic

August 29, *XXXVIII*, No. 35, pp. 1201-1216

94 *Formaldehyd Cauterization to Arrest Climacteric Hemorrhage. (Konzentriertes Formalin, das am schnellsten und sicherste wirkende chemische Mittel zur Behandlung klimakterischer Blutungen.) E. Gerstenberg.

95 Acetonuria Following Spinal Anesthesia. G. Gellhorn (St. Louis).

94. Concentrated Formaldehyd in Treatment of Climacteric Hemorrhage.—Gerstenberg states that he uses a solution containing 40 parts formaldehyd in 60 parts of water to paint the uterine mucosa to arrest climacteric hemorrhage, and has never had any mishaps with it. It advantageously substitutes for or supplements curetting or roentgenotherapy while it is far superior for numerous reasons to atmo-causis or zinc-chlorid applications. He even affirms that if uterine hemorrhage in women of 40 to 50 is not arrested by two formaldehyd applications in this way, some special cause for the hemorrhage is more than probable. The trouble generally proved to be myoma in his cases; in one the myoma pre-

rectum, and excellent nursing may aid, but in most instances they accomplish little. The only cure is prevention (a) by increasing the store of energy and (b) by stopping the expenditure of energy and the consequent fabrication of acid. The first end may be accomplished by increasing the intake of food and water; by the administration of sodium bicarbonate and glucose, and by having the patient sleep in the open air. Energy may be conserved by limiting physical activity and so far as possible eliminating worry and anxiety before the operation; and by diminishing acid production during and after the operation by complete anoci-association.

With the starved patient no anesthetic and no narcotic is safe. Anesthetics increase acidity in a direct ratio to the amount given; morphin does not increase acidity but does interfere with neutralization. Psychic quiet for these patients may be safely secured by bromids administered per rectum. Just enough nitrous oxid should be administered to give a twilight anesthesia so that the patient may be protected against the destructive action of fear. The infiltration of novocain in 1:400 solution precedes each division of nerve-bearing tissue. An ample incision is made and a feather-edge technic is employed throughout the operation. To insure complete relaxation during the operation and to promote postoperative comfort the abdominal wall at a distance from the incision is thoroughly infiltrated with quinin and urea hydrochlorid in 1:600 solution.

If the margin of safety is very narrow the operation is performed in two stages. For example, a gastro-enterostomy is followed by gastrectomy after the nutritional balance has been restored; or in a case of common-duct obstruction with infection, the gall-bladder is first drained until the jaundice disappears and the margin of safety is enlarged, when the stones may be removed safely.

Another great danger in gall-bladder operations is interference with the function of the liver by injuring its nerve supply. In our experiments we found that blocking the nerve-supply to the liver caused histologic changes. We found also that when the splanchnic nerves are roughly handled the brain cannot control the epinephrin output.

A sharp knife, bloodless dissection, the elimination of pulling and tearing manipulations and a minimum amount of sponging are required. Because of the very slight insulation of the splanchnic nerves, their injury is surprisingly easy; for this reason also, therefore, the two-stage operation is advisable in critical cases, as thus a smaller number of splanchnic nerves will be injured at one time and the interference with the functions of the already almost overwhelmed liver and adrenals will be diminished.

These deductions are based not only on laboratory experiments but on clinical observations as well. Since I have begun to apply these principles in gall-bladder and stomach operations I have seen a remarkable improvement in the results.

The postoperative care of these patients is of vital importance. Skilful, tactful nurses by creating an innocuous environment can most valuably second the efforts of the surgeon who, in the patient's room as clearly as in the amphitheater, visualizes the clinical problems which his special case presents.

A brief word may well be added concerning the danger of postoperative pneumonia. This danger may be almost eliminated by discarding ether and by the infil-

tration of quinin and urea hydrochlorid at a distance from the wound. The tendency of ether to cause bronchitis and pneumonia is generally recognized. Pneumonia does not result from the use of nitrous oxid oxygen. Even without ether, however, a painful wound may in itself cause pneumonia. When a wound in the upper abdomen is painful, the respiratory excursions are inhibited; the lung is not expanded, and pleurisy and pneumonia are the natural result. The painless wound which is assured by the use of quinin and urea hydrochlorid will, therefore, prevent postoperative pneumonia.

The complete application of the principle of anoci-association, not only during the operation but also in the preoperative and postoperative care of the patient, will minimize the two greatest dangers attending gall-bladder and stomach operations—exhaustion with its fatal sequel, acidosis, and postoperative pneumonia.

Osborn Building.

ABSTRACT OF DISCUSSION

DR. W. D. HAGGARD, Nashville, Tenn.: We are greatly indebted to Dr. Crile for the elucidation of factors of which we have evidently been hitherto unaware. We have been so engrossed with the pathology that it may be said we have been pathologically wise, but physically foolish; but Dr. Crile has joined the experimental with the practical. Gentle manipulations and extreme care should be used particularly in those cases in which the great primitive organs of the body are concerned. We learn from surgical associates, of patients with chloroform poisoning who die on the fourth and fifth day without apparent cause. The blood-count is just like that in phosphorus poisoning. So we find that in surgical deaths when this drug is not used the important function of the liver has been interfered with. We seem to forget that the sympathetic nerve controls the liver and in our operations on this organ and the common duct, a perfectly mechanical thing, our mortality has been frightful because we have ignored the fact that, if we destroy the innervation of this big center of the body, we not so much destroy the patient's resistance as inhibit his opportunity for recovery. I was glad Dr. Crile referred to the gall-bladder as he did, because we have had the pendulum of opinion going to and fro, some thinking that if the gall-bladder is lost our landmarks are gone. I had this experience in an ordinary inflamed gall-bladder which I left in. I had the intense chagrin of seeing that patient develop malignant neoplasm of this retained gall-bladder. An experience of that kind does much more to shape our course than any theorizing. When put to the test of analysis, how unwise it seems to leave the thickened, inflamed gall-bladder which is already functionless and out of commission. Why not remove it so that the patient can have the benefit of immediate and permanent recovery? Our generation will scarcely appreciate keenly enough the remarkable addition to our therapeutic resources that have come from the elaborate and convincing studies presented by Dr. Crile and his associates.

DR. ERNEST LAPLACE, Philadelphia: So eminent a man as Sir Berkeley Moynihan said in my presence that Dr. Crile's work was the greatest thing in surgery since the work of Lister, and I believe it. For years I have taught that there was but one kind of shock, and that traumatic, emotional, chemical or physical shock must produce the same material results. It remained for Dr. Crile to prove that assertion. The logical sequence to this has been the birth of anoci-association with the wonderful improvement in the operative recovery of patients. Hence, we must diminish the causes of shock. Mechanical interference and tampering with the peritoneum, especially in the region of the gall-bladder and liver, is probably one of the greatest additional causes of shock. Gall-bladder surgery just now is undergoing the same course that appendiceal surgery went through some

years ago. The gall-bladder is a diverticulum like the appendix which should be removed if it has ceased to serve its purpose. Gall-stones likewise should be removed with the least shock-producing procedures, quickly, and with the least interference with the peritoneal cavity leading to anoci-association. With that object in view I have devised a simple liver retractor. In removing the gall-bladder the liver was formerly lifted by the hand of an assistant. Instead, I now lift the liver with a long smooth wire retractor while the gall-bladder drops into a forked space in the center of the retractor. This facilitates the dissection of the gall-bladder and affords a better view of the gall-ducts and neighboring structures. This is a step in carrying out the shockless operation, as it facilitates and expedites the work.

DR. ROBERT T. MORRIS, New York: Dr. Crile has reduced to analysis principles I have held for many years. The principles of the fourth era of surgery I stated very crudely, but at least felt clinically the experience that was giving this trend, and expressed it in various ways. I taught for many years the crude outline form of anoci-association. Many of us have been doing the same thing. Dr. Crile has simply given us a refined product because of his philosophic method of work; synthesis in association with his scientific analysis.

DR. ALBERT J. OCHSNER, Chicago: If we go home with the valuable principles which are at the bottom of the remarkable clinical success of Dr. Crile's work, and with a thorough appreciation of the fundamental principles, we will be the gainers. The fundamental principle is, in the first place, to widen as much as possible the margin of safety. The various things that Dr. Crile does in his practice inspire the patient with confidence, making him feel that he is in the best hands under the conditions in which he exists. Everything is favorable, the patient is in the hands of nurses who know that things must go well after Crile has finished the operation. Every surgeon should introduce this element and carry it out in his work. He should not do his work where forty other surgeons are doing bad surgery. The second principle is that none of this margin of safety should be wasted. There is neither insane haste nor imbecile deliberation in Dr. Crile's work. His surgical judgment indicates what should be done and after he is through with the operation the best possible and nothing harmful has been done. Another fundamental principle is that all the useless things done must be harmless; for instance, introducing quinin and urea hydrochlorid. This is one of the useless things, a little of which will do the patient no more harm than any one of many other useless things. Many Christian Scientists have come to me for operation. I have found that one of these patients will do better after an operation than another patient after the same operation, simply because that element of waste is eliminated. The value of faith in the remedial element I saw illustrated some twenty-five years ago when I was chief assistant to Charles T. Parkes. A visitor after a week with us said it was wonderful that our anesthetics went so quietly, that we had no vomiting, that the patient's condition was perfect throughout the anesthesia. "How do you do it?" Dr. Parkes replied, "We give morphin $\frac{1}{4}$ grain and atropin $\frac{1}{100}$ grain half an hour before the anesthesia is begun." A nurse who heard this came to me and said, "I have been on duty for a year and a half and I have never given this. Is it possible that I should have known this and that I was not informed when I undertook this work?" We had no cyanosis during the anesthesia; we had almost no postoperative pneumonias. A man from the East came to my hospital with a remedy which was intended to stop postoperative vomiting. He told a very plausible story. I instructed the superintendent of nurses to use this in every case of postoperative vomiting. Some time later I asked her whether the remedy was doing what was claimed for it. She replied, "We have had no postoperative vomiting." Now if I had done some useless thing, so long as it was harmless, it would have seemed good practice, and it would have been most natural to attribute the good results to this factor.

DR. CONRAD A. HOWELL, Columbus, O.: No one follows out the principles which Dr. Crile has endorsed more than I. It was from Dr. Crile that I first got the impelling motive to use his technic and the principles involved in anoci-

association. So much have I been impressed with the necessity of rest, both mental and physical, that a patient who goes into a hospital the night before the operation is made to sleep under the influence of veronal. I consider ten or twelve hours sleep the *sine qua non* for the operation which is to take place next morning. I can readily imagine what the thought would be that every tick of the clock means a second nearer the time set for the operation. As to the use of narcotics, morphin, hyoscin, I do not use them as was suggested by Dr. Ochsner. My operating hour is 9 a. m. The veronal which was administered the night before keeps my patient asleep until 7 a. m. At 7, dependent on the physical characteristics of the patient, I order morphin $\frac{1}{8}$ grain, hyoscin, $\frac{1}{200}$ grain, and at 8 I repeat a similar dose, with the object of keeping the patient's mentality, his cerebral centers, in a completely sedative state until 9, the time set for the operation, and not in that raspy, keen pitch, which would be the case if these narcotics were administered only one-half hour before he is to be operated on. Veronal the night preceding the operation, morphin and hyoscin at 7 and 8 keeps the patient in a tranquil condition from the time he wakes until the time of operation. The morning hour is the time for operating, not the afternoon—the morning hour when the patient has been refreshed by sleep, when there has not been a long interval between the time of waking and the time set for operation. With regard to quinin urea hydrochlorid, do not use it strong (1 per cent.). Do not use it near the skin. It produces a fibrinous exudate which strangulates the blood-vessels supplying the skin and will cause a slough. Use it deep in the muscular structure; use it in the parietal peritoneum. I cannot agree with Dr. Crile when he says that he puts patients to bed and gives them bromids because, using quinin and urea hydrochlorid in the strength which I do (1:400), I must confess that the patient still suffers pain, though not the amount that would be present without the use of that drug. I believe that pain breaks down cerebral cells if kept up for hours after an operation, and tends to produce shock; therefore I use morphin in small doses as a postoperative adjunct.

DR. GEORGE W. CRILE, Cleveland: We never give morphin to a very old or very young patient, or to one who is very sick. We do give morphin grain $\frac{1}{8}$ and scopolamin grain $\frac{1}{150}$ to patients who are not debilitated. After the operation we do not hesitate to give morphin again, in small doses. We also use novocain. It does not interfere with the healing of wounds. Quinin and urea hydrochlorid injected into the skin does produce a marked reaction in the tissues, but, as Sir Berkeley Moynihan states, if quinin and urea hydrochlorid is injected at a distance from the wound itself it will interfere with healing no more than any other manipulation does. When quinin and urea hydrochlorid in 1:600 solution is injected at a distance from the wound it does not come in contact with the wound itself. Of course whether quinin and urea hydrochlorid will ultimately prove to be as valuable as we now think it is, will be determined by the testimony of the patients.

Challenge to Christian Science.—The following proposition was made at a lecture on Christian Science by J. W. Springthorpe, Melbourne, Australia (Therapeutics, Dietetics and Hygiene, ii, 651): "Leaving the abstract for the concrete, I will now undertake to demonstrate to the local coterie of Christian Scientists that their minds do not dominate their own bodies, much less the bodies of others, and I will do so with drugs, which they say are powerless. Thus with one drug I will make their president speechless and motionless; with another I will make their vice-president red all over or perspire horribly, whichever she dislikes most; with a third their treasurer the sickest possible in the time; and with a fourth their secretary unable to read her 'Bible', though she shall still see the book. Surely here is real 'fruitage'—or failure." Needless to say, the challenge, though reported to headquarters, was not taken up. It is hardly necessary to add that chloroform, amyl nitrite, pilocarpin, apomorphin and atropin would have produced the effects mentioned.

EXPERIMENTAL SURGERY OF THE
HEART, LUNG AND TRACHEA*

AXEL WERELIUS, M.D.

CHICAGO

HISTORICAL

In a not very distant past surgical interference of the heart itself was considered quite out of the question, and even its suggestion seemed highly ridiculous.

As late as 1888 Rydinger said that "the proposal of suturing of heart wounds hardly needs any serious consideration." Even Billroth told his friends that any one who tried to suture a heart wound would surely lose the respect of all his confrères. No doubt unknown to these authorities, however, about this time experimental work was being done along these lines. As early as 1812 Block¹ demonstrated a dog in which he had successfully sutured the heart. He was followed by Howell and Donaldson,² in 1884, Phillipson³ (1886) and Del Vecchio⁴ (1894). Then came Cappelen and Farina,⁵ each with an attempt at heart suture in man with disastrous results, followed by Rehn⁶ in the same year with the first successful suture of the human heart. Thus the path was broken and in 1913 Wagner⁷ was able to collect 260 cases with the truly marvelous result of almost 50 per cent. recoveries, and now the researcher is patiently paving the way for a surgical invasion of that sacred Lhasa of the human, the interior of the heart.

Surgical attack of the pericardium has a great deal longer history, and there is reason to believe that tapping of the heart-sac was practiced by the ancients and surely by the medieval surgeons.

Riolan⁸ talks of the permissibility of opening the chest wall for pericardial effusions. He, however, cites no cases. One of the first, if not the first, to incise the thoracic wall for the purpose of reaching the pericardium was the famous Larrey,⁹ the surgeon-general in Napoleon's army, who in his interesting memoirs describes a case of self-inflicted heart-wound followed by empyema of the heart-sac in which he bravely incised the chest wall between the fifth and sixth ribs and evacuated a great amount of fluid, followed by temporary improvement of the patient. He also palpated the apex of the heart with his fingers.

Romero¹⁰ a little later also incised the pericardium and further on reported some cases to the Faculty of Medicine in Paris. This society, however, disapproving of the operation and lest others might imitate, refused to publish the paper in its *Proceedings*. The operation is also reported by Fowett,¹¹ Karawagon and others. Early experimental work was done by Amerito,¹² who concluded that animals thrived fairly well without the heart-sac.

The history of lung surgery extends back to Hippocrates, who was probably the first to describe pneumonotomy (Ricketts¹³).

Bolgius (1710) was one of the first to incise the pleura for lung wounds. Rolandus of Parma published the first account of successful operation for hernia of the lung. Fabricius Hildanus (1646) and Ruysch (1777) recorded cases in which portions of the lung had been excised.

Camparadon treated abscesses of the lung with surgical intervention, and Baglion in 1714 advocated operative measures in pulmonary tuberculosis.

The modern history includes a number of brilliant clinicians and researchers, and rapid advances are recorded due to the perfected operative technic and all important aid of artificial respiratory apparatus introduced by Sauerbach.

Estlander¹⁴ was the first to treat empyema with thoracoplasty.

Tuffier had done a great deal of well recognized work along the lines of lung surgery. De Lormo, Ombronin and Michaux (Ricketts) performed pneumonectomies for grave injuries to the lung.

Willard reported bronchiotomy from behind for foreign bodies in the bronchus.

Murphy¹⁵ conceived the brilliant idea of adapting the accepted method of rest for tuberculous lesions to that of the lung by introduction of nitrogen gas in sufficient quantities to completely collapse the lung and thus immobilize it. Other pioneers are Mosler, Kolle, Bull, Roswell Park, Lemcke, Fenger, Reclus and many others.

According to Newberger and Pagels¹⁶ tracheal surgery in the form of tracheotomy was known to the Jews before the Christian era and probably also to the Greeks and Romans. In the sixteenth century Vidus Vidius (Pagels) is said to have opened the trachea and inserted gold and silver tubes.

The modern work of the lung-tube concerns the repair of the tracheal defects and resections of which the first attempt was made by Gluck and Zeller¹⁷ (1891), who in working on the esophagus of a dog accidentally tore the trachea and repaired it. The first premeditated attempt was made by Colley¹⁸ in 1895.

Kuster¹⁹ was the first to report resection of several rings of the windpipe, followed later by Foederl, von Haecker Konig.

The first intrathoracic suture seems to be the one reported in this paper (by me).

The status of the present thoracic surgery in all its branches is due in a great measure to the brilliant clinicians and researchers of this country, namely, Carrel, Bernheim, Cushing, Willy Meyer, Robinson, Murphy, Halstead, Elsberg, Crile and others.

GENERAL TECHNIC

Owing to the extreme susceptibility of the pleura and the pericardium to infection, the most painstaking and scrupulous asepsis must be maintained. The defensive power of these serous sacs is greatly less than that of the peritoneum, so that procedures that would prove fairly satisfactory in intra-abdominal work would be absolutely fatal in an intrathoracic invasion. The resistance of the pleura as to that of the chest wall is almost incomparable, as behind a per-

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Block: *Gaz. med. de Strassbourg*, October, 1882.

2. Howell and Donaldson: *Phil. Tr. Roy. Soc. London*, 1884, Part 1, p. 139.

3. Phillipson: *Russian Med.*, 1886, iv, 187.

4. Del Vecchio: *Internat. Cong. Med.*, Rome, 1894, iv, 297.

5. Farina: *Ztschr. f. Chir.*, 1896, p. 1224.

6. Rehn: *Jour. Exper. Med.*, v, vi, 488.

7. Wagner: *Deutsch. Ztschr. f. Chir.*, cxix, 222.

8. Riolan: *Encheiridium Anatomicum*, Paris, Ed. 4, 1658, p. 213.

9. Larrey: *Mémoires de chirurgie militaire*, Paris, 1812, iii.

10. Romero: *Dictionnaire des sciences médicales*, 1819, 370.

11. Fowett: *Gunter's Blutigen Operationen*, iv, Part 3, p. 102.

12. Amerito: *Internat. Cong. Med.*, Rome, 1894, iv, 301.

13. Ricketts: *Surgery of Heart and Lungs*.

14. Estlander: *Nord. Med. Arch.*, 1879, v, 11.

15. Murphy, J. B.: *Surgery of the Lung*, *THE JOURNAL A. M. A.*, 1898, xxxi, 151, 208, 281, 261; *Internat. Cong. Med.*, Paris, Section of Surgery.

16. Newberger and Pagels: *Handb. d. Gessch. d. Med.*, i, 117.

17. Gluck and Zeller: *Arch. f. klin. Chir.*, 1891, xxvi.

18. Colley: *Deutsch. Ztschr. f. Chir.*, xl, 150.

19. Kuster: *Wien. Klin.*, 1890, Nos. 3, 4.

fectly healed chest wall without at least any macroscopic sign of infection you may have a pleural cavity filled with pus and this without any bronchial leakage. Thus it is of the greatest importance to use every possible precaution in thoracic work. The animal should receive the antiseptic bath a day or two before the operation. At the time of operation it is well to give an antiseptic mouth wash. The tracheal tube should be boiled for each animal. The coil of the tracheal tube we often pass through hot water. The operative field should receive the most pedantic toilet.

In all our work we have used the intercostal incision and sometimes after entering the thorax the opening has been forcibly stretched. This has given splendid exposure and to me it has seemed better than the flap opening in that it creates less abnormal conditions, namely, fractured ribs, cut muscles, divided nerves, etc. It surely causes less postoperative disturbances, healing sooner, and with less chance of infection.

The wound edges should be covered with sterile gauze. All tissues should be gently handled with instruments. It is preferable not to touch the interior of the chest with fingers. As suggested and practiced by Carrel, packing should consist of oiled Japanese silk and then be covered with moist hot sponges. The local atelectasis produced by pressure from sponges should be remedied by forcible expansion of collapsed area before the chest is closed.

Great stress has been laid on forcible inflation of lung before suture of the chest cavity. This is probably desirable but not at all important, as the animals in which we neglected this maneuver fared just as well as the others. However, it may be good practice. The wound suture must be done carefully in layers. We used catgut and the deeper stitches we placed around the two adjacent ribs thus making a perfect splint. This undoubtedly enhances the healing and surely lessened the postoperative discomfort.

This wound was dressed in plain gauze, pneumonia jacket applied, and animal surrounded with hot-water bags in its cage. Morphine was given before and after the operation.

For artificial respiration we used a simple home-made affair consisting of two automobile pumps made by Dr. Simon and later perfected by my assistant, Dr. Rahe.

EXPERIMENTAL WORK

For the following experiments 120 cats have been used, including those used for development of technic. Complete clinical records have been kept of each one by Dr. Rahe. Space does not permit of all the observations being printed. I have given only the main data. Some of the animals have been kept over half a year. We should have liked to have saved a great number for long periods, but this was impossible on account of inadequate quarters.

I. PERICARDIUM

Complete excision was done in order to study the clinical findings and the extent of adhesions following. Practically no disturbance follows the procedure. The animals acted as before operation and nothing could be heard on auscultation. One was kept for over six months and was in splendid condition when killed. Adhesions were found mainly to the mobile lung, which explains the lack of symptoms.

Repair of pericardial defects might become necessary following mediastinal operations. Great loss of pericardial tissue cannot be remedied by drawing the sac together with sutures, as the heart will not endure the pressure caused by a tightened pericardium. This we have often noticed.

In two cats we closed the pericardial openings with a lipofascial flap from the chest wall. This flap should be made quite long, as it later contracts and then may cause serious trouble, as happened in one cat probably by causing too much traction on vessels at the base of the heart. In a few cats we replaced the excised heart-sacs by a piece of omentum. This, however, is of very doubtful value as there is great danger of the transplant not thriving and, if successful, it forms close adhesions all around the heart and to the surrounding lung. For some reason that I cannot explain, these animals suffered more than any of the others we used in this research.

Strips of pericardium might be used as artificial ligaments if ever cardiopexy should be practiced.

CAT 1.—April 15, 1913. Excision of pericardium. Killed July 20, 1913. Heart glistening, few adhesions to lungs, and mediastinum otherwise normal.

CAT 2.—Jan. 16, 1914. Killed May 21, 1914. Slight adhesions to lung, some to mediastinum. Heart smooth, of normal size, interior normal.

CAT 3.—July 18, 1913. Repaired pericardial defect with lipofascial flap. Died July 24. Contraction of flap seemingly interfered with heart action.

CAT 4.—July 18. Operation as before. Killed Aug. 20, 1913. Flap took well; adhesion of lung to suture-line.

CAT 5.—Oct. 14, 1913. Excision of pericardium, and replaced by transplanted omentum. Killed Nov. 9. Omental transplant adherent to heart and lung. Heart normal.

CAT 6.—Nov. 10, 1913. Operation as above. Died November 13 from infection.

CAT 7.—November 12. Operation as above. Died November 19 from sloughing of transplant.

II. HEART

Before going into details of our work it would probably be of some interest to consider the special technic of heart surgery.

After the chest cavity is opened, the pericardium is picked up in much the same manner as the peritoneum. A small amount of clear watery fluid escapes on incising the sac. The incision may be made in various ways. We made a longitudinal straight cut. By experience we found it best not to make this opening too near the base of the heart, as in sewing up you may cause too much tension in this region, resulting in acute cardiac dilatation. By making slight traction on the edges of the pericardium the heart is drawn slightly forward and partly or entirely delivered from it. The heart must be drawn forward carefully as too much traction is one of the great dangers in heart surgery. Many a cat did we lose in the preliminary experiments before we recognized this very important fact.

In doing intracardiac work, hemorrhasis becomes at once the foremost problem. This has been solved in different ways. Rehn,²⁰ Magnus and Noetzel used digital compression of the right auricle or temporary ligation of the vena cava, but this could be maintained for only one and one-half minutes. Schepelman²¹

20. Rehn, L.: *Verhandl. d. Deutsch. Gesellsch. f. Chir.*, 1907.

21. Schepelman: *Deutsch. Ztschr. f. Chir.*, 1913, cxx, pars 5 and 6, p. 573.

applied ligature on vessels at some distance from the heart. He also clamped the heart with rubber-covered clamps. Haeckers asserts that the heart could endure clamping of the vena cava from nine to ten minutes. Carrel occludes the aorta for two to six minutes. Lange puts a ligature around both auricles. We have used an ordinary bowel clamp without clasp suggested by Dr. Rahe. With this instrument we applied just enough pressure to produce hemostasis, doing absolutely no damage to the heart-muscles.

In applying clamps one should avoid the area about the junction of the upper with the middle third of the anterior longitudinal sinus, the mechanical irritation of which may cause acute dilatation of the heart (Spongaro²²).

Another dangerous region is at the junction of the right auricle and the vena cava. In incising the ventricles it is advisable to avoid the coronary vessels and to make a straight clean cut. Almost the entire ventricle may be laid open. A small wound bleeds only during systole, a larger one both during systole and diastole.

The opening is best sutured with fine silk. We used continuous suture.

If at the close of an operation the heart acts badly we have found it fatal to suture the pericardium completely. To a poorly acting, partly dilated heart, pressure is just as harmful as excessive traction on the organ. Under such conditions the heart absolutely needs sufficient room for action; otherwise it soon begins to fibrillate.

In two cats after having finished the operation we saw the animals going through all the ordinary ante-mortem symptoms, using all the accessory muscles of respiration, exhibiting facial spasm and the final gasps. On rapid opening of the wound and the pericardium, the heart was soon acting normally. The pericardium was left open. Both animals survived.

There is no doubt that some of the human heart-wound patients on whom operation is performed and which terminated fatally might have been saved had the pericardium been left open.

To me, as well as to other observers, it has been astonishing how little immediate reaction the animals have shown from this work. Cats which have had their ventricles opened and digitally explored, instruments passed from ventricles into auricles and even up into the veins, auricular appendixes removed, stab-wounds through and through the heart have been jumping off and on tables in less than an hour after the operation. In few of our animals did we hear anything abnormal on auscultation. In some there was irregular heart action and only occasionally did we hear murmurs. Postoperative findings have been very few.

III. CARDIOTOMY WITH INSTRUMENTAL DILATATION OF AURICULOVENTRICULAR VALVE

Surgery of the valves was first suggested by Brunton,²³ who asserted that a mitral or tricuspid stenosis could undoubtedly be remedied by operative measures, transforming the condition into a mild insufficiency. As this lesion in animals is a great rarity, it had to be produced experimentally in order to test out the value of such operative therapeutics. Thus Bernheim²⁴ and others produced the lesion by passing a silk

ligature around the valve. Bernheim used twenty animals, of which ten survived from a week to ten months.

The valves may be reached operatively either through the vessels, or as seems far preferable, through the ventricles. Rosenstein was the first to attack the valves directly in an attempt to produce tricuspid insufficiency, passing instruments through a great neck vessel. By far most of the animals died.

Cushing and Brandt²⁵ worked through the so-called laparothoracoscope, cutting the stenosis. They succeeded in six out of twelve animals. Haecker²⁶ opened the ventricles and cut the valve with the aid of the eye. All the animals died. Jacobaeus and Lilgestrand used puncture instruments and performed the operation by the sense of touch.

Schepelman²⁷ aims by ventricular and auricular anastomosis to equalize circulation in tricuspid stenosis. Rather formidable an intervention, I think.

We aimed to remedy the lesion by stretching the contracted opening with ordinary artery forceps. The ventricle was opened more or less forcibly. The value of this experiment is, of course, greatly minimized as we had not previously produced an artificial stenosis; still we wanted to ascertain how the animals would endure this manipulation. Our animals stood this about the same as an ordinary cardiotomy.

CAT 8.—Operated on, April 17, 1913. Died Dec. 12, 1913. Heart dilated; fluid in abdomen.

CAT 9.—Operated on, April 23. Same operation. Died on table.

CAT 10.—Operated on, April 24.—Died on table.

CAT 11.—Operated on, April 25, 1913. Posted July 1. Adhesions between lungs and chest. Heart incision healed perfectly. No enlargement; internal surface smooth.

CAT 12.—Operated on, May 5, 1913. Killed July 10, 1913. Heart normal in size; small line where opened; no adhesion between lungs and chest.

CAT 13.—Operated on, Oct. 15, 1913. Heart also punctured with hat-pin. Killed Oct. 28, 1913. Findings similar to above.

CAT 14.—Operated on, Oct. 17, 1913. Died October 28. Purulent infection in chest cavity.

CAT 15.—Operated on, Oct. 17, 1913. Died Oct. 19, 1913. Lungs congested; sink in water.

CAT 16.—Operated on, Oct. 21, 1913. Died three hours after operation; acute dilatation of heart.

CAT 17.—Operated on, Oct. 22, 1913. Killed December 4. Few adhesions, otherwise negative.

CAT 18.—Operated on, Oct. 29, 1913. Left auricle removed; hat-pin thrust through heart. Died December 28 from intercurrent disease; few adhesions along cut; interior of heart normal.

CAT 19.—Operated on, Feb. 24, 1914. Transverse incision in heart. Killed, March 20. Scar very distinct; lung adherent to it; heart somewhat enlarged.

CAT 20.—Operated on, Feb. 25, 1913. Killed June 2. Slightest adhesion to cardiac wound, otherwise negative.

IV. PUNCTURE-WOUNDS OF THE HEART

Excepting those of a certain area in the anterior interventricular groove, puncture-wounds of the heart, unless very extensive, cause only temporary disturbances, the degree of which varies with the type of the insulting agent. Needle punctures, even those going through and through the organ, cause only, as a rule, a momentary increase in the heart action, which

22. Spongaro: Arch. Internat. de Chir., 1907, iii.

23. Brunton: Lancet, London, 1902, i, 362.

24. Bernheim: Bull. Johns Hopkins Hosp., April, 1904, p. 107.

25. Cushing and Brandt: Jour. Med. Research, 1908.

26. Haecker: Arch. f. klin. Chir., 1908, lxxxiv, 1035.

27. Schepelman: Deutsch. Ztschr. f. Chir., cxx, 570.

may at times become tumultuous, especially at the time of introduction of the needle, but in a short time the action is perfectly normal. In one cat we made four such punctures. It made an uneventful recovery. In another we punctured the heart with a mosquito forceps with similar results. In the course of other operations we often punctured the heart here and there, without seemingly greatly adding to the danger of the operation. The hemorrhage following is very slight, and unless the coronary vessel is injured no ligature is needed.

In knife stab-wounds the disturbance is somewhat more prolonged, and a suture is needed at entrance and exit of the wound tract.

Multiple stab-wounds are of course serious, but it is remarkable to what extent the heart may be damaged and still recover. This, of course, refers to injuries received under aseptic conditions.

CAT 21.—Operated on, Feb. 4, 1913. Four through-and-through needle punctures. Killed March 14. Heart negative.

CAT 22.—Operated on, June 4, 1913. Mosquito forceps passed through the entire heart. Killed July 3, 1913. Heart showed no signs excepting small white spots where puncture was made.

CAT 23.—Operated on, March 14, 1914. Knife stab-wound through and through left ventricle. Died March 16. Heart normal in size.

CAT 24.—Operated on, March 14, 1914. Several knife stab-wounds. In closing operation heart acts splendidly. Killed by anesthesia.

V. AURICULAR APPENDECTOMY

In cats the auricle appendix is of considerable size. It closely resembles a leaf fluttering over the ventricle. Its walls are very thin, and it is not amenable to suture. There does not seem to have been much if any surgical work done in that portion of the heart. The only one we could find was Domenichi,²⁸ who tied off part of the left auricular appendix. The dog died on the table. We excised the left, the right and then both appendixes.

In all our work excision of the left auricle appendix resulted in the least disturbances, seemingly not any more than if the chest and pericardium had been opened.

After excision of both appendixes no cat lived over three weeks, but we did not use a sufficient number of animals; otherwise I think we might have got some to live on. Post mortem we noticed in these cats great congestion of the lung, and also of other organs. It seems that the excision of both appendixes causes enough interference with the circulation to produce this excessive congestion. The operation was simple. We picked up the appendix with mosquito forceps and tied it off at its base and excised it.

REMOVAL OF LEFT AURICULAR APPENDIX

CAT 25.—Operated on, May 23, 1913. Killed July 17, 1913. Lung adherent to pericardial sac and along chest wound. Heart normal in size, free in pericardial sac. Stump of auricle free and smooth; no enlargement.

CAT 26.—Operated on, May 24, 1913. Died May 30. Infection in the pleural cavity.

CAT 27.—Operated on, May 26, 1913. Died June 1. Infection in pleural cavity.

CAT 28.—Operated on, Sept. 25, 1913. Killed Dec. 15, 1913. Lung adherent to pericardial sac. Heart free in sac. Normal in size. Stump of auricle smooth. Cause of death appeared to be pneumonia.

CAT 29.—Operated on, Oct. 3, 1913. Killed June 18, 1914. Slight adhesions of lung to pericardium. Heart free in sac and normal in size. Interior negative.

CAT 30.—Operated on, Nov. 12. Killed December 12. Lung adhesion to scar.

CAT 31.—Operated on, March 20, 1914. Died March 24. Pulmonary embolism.

REMOVAL OF RIGHT AURICULAR APPENDIX

CAT 32.—Operated on, Oct. 11, 1913. Died October 16. Infection.

CAT 33.—Operated on, Oct. 14, 1913. Killed Dec. 5, 1913. Heart normal in size. Lung adherent to pericardium.

CAT 34.—Operated on, Nov. 12, 1913. Killed Jan. 14, 1914. Slight pericardial adhesions to stump. No external pericardial adhesions.

EXCISION OF BOTH AURICULAR APPENDIXES

CAT 35.—Operated on, Oct. 15, 1913. Died Oct. 30, 1913. Infection.

CAT 36.—Operated on, Oct. 23, 1913. Died Oct. 25, 1913. Acute congestion of the lungs and other organs.

CAT 37.—Operated on, Oct. 27, 1913. Died Dec. 2, 1913. Died from intercurrent sickness.

CAT 38.—Operated on, Oct. 28, 1913. Died three hours after operation. Embolism.

CAT 39.—Operated on, Jan. 31, 1914. Died Feb. 2, 1914. Congestion of lungs and other organs.

MISCELLANEOUS WORK

In working on the heart we could not resist the temptation of listening directly to the organ with the stethoscope. We also examined the heart by tracheal and esophageal auscultation. The direct method was not at all satisfactory, the sounds being muffled and indistinct. The unopened chest barrel is required to intensify the sounds. Through the tracheal tube the heart-sounds could be heard with startling distinctness, when breathing was temporarily suspended. In one cat we heard a faint, soft murmur that could not be heard by auscultation of the chest.

Through the esophagus the heart-sounds are not heard any plainer than by ordinary auscultation. We also tried this in man through a stomach-tube, but the sounds were not very plain.

In some cats we performed multiple operation, such as removal of heart-sac and cardiectomy, cardiectomy and auricular appendectomy, stab-wounds and auricular appendectomy, etc.

CAT 40.—Operated on, May 12, 1913. Small piece resected from left ventricle. Died on the table from acute dilatation of the heart.

CAT 41.—Operated on, May 12, 1913. Operation as above. Killed July 17, 1913. Heart normal in size; lung adherent along line of incision. Internal surface of heart smooth; slight depression along line of incision; firm union.

CAT 42.—Operated on, May 5, 1913. Operation as above. Died from anesthesia.

CAT 43.—Operated on, May 5, 1913. Operation as above. Left auricle was accidentally cut and tied off. Killed July 17, 1913. Heart seemed slightly enlarged. Lung adherent along line of incision. Auricle that was partially removed was smooth. Heart incision showed separation of muscle-fibers, leaving a pouch of fibrous tissue.

CAT 44.—Operated on, March 10, 1914. Excision of pericardium; cardiectomy. Killed May 2; adhesions to lung.

CAT 45.—Operated on, March 10. Left auricular appendectomy; cardiectomy; stab-wound; killed April 21. Slight intrapericardial adhesions; heart normal.

CAT 46.—Operated on, March 14. Knife stab-wound. Double auriclectomy. Died March 17 from infection.

CAT 47.—Operated on, March 14. Use of ice on heart.

CAT 48.—Operated on, March 14. Excessive heat on heart.

28. Domenichi: Bull. d. r. Accad. Med. di Roma, 1913, xxxviii, 83.

LUNG RESECTION (UNILATERAL)

This operation would be performed for malignancy, tuberculous foci, actinomycosis, gangrene, etc. The main operative dangers from pneumonectomy are pleural infection and pyopneumothorax from reopening of the tied bronchial stumps. Consequently the object of most of the experimental work has been to devise methods that would as much as possible overcome these operative risks.

The special difficulty is really the closure of the cut-off bronchi, and several more or less successful procedures have been proposed, none of which, however, is fully reliable.

Carrel²⁹ says that he used only simple ligation of stump with good results.

Probably the best closure is that devised by Willy Meyer,³⁰ who treats the bronchial stump somewhat like the cut of an appendix vermiformis. One of his reports gives twenty-one total resections with seventeen recoveries.

Robinson³¹ using a simple ligation, saved four dogs out of thirty. In total resection there was no recovery. In all his fatal cases he found a great amount of pleural effusion which greatly displaced the heart, fatally interfering with its action. This fluid was sterile. We also observed this in our fatal cases, but we always found this fluid to contain bacteria of various sorts. Some effusion is present, however, in all cases following total lung excision.

Courmont³² experimented on dogs and rabbits to discover the minimum capacity of lung compatible with prolonged survival.

Friedrick³³ studied the skeletal changes following total unilateral pneumonectomy, noting the attempt, as did several others, of the pneumonectomized side to close in the empty space.

In our work we found in young cats that the lungless side collapsed very quickly so that sometimes in a week there was a marked difference. In older cats these changes come on much more gradually. In order to meet this attempt at cavity obliteration half way, we resected the mediastinum, which in cats is only of the thickness of a leaf, aiming then to have the remaining lung fill the empty space, preventing the marked collapse noticed in the other cats with undisturbed mediastinum. Our results somewhat favor this supposition.

Roentgenograms show very little osseous changes on the lungless side, and cross-section of frozen cat shows the lung moderately distended, almost filling the empty space. The lung-stumps were covered in the different ways mentioned above. The series is too small to declare any preference for any particular method. As in heart surgery the immediate result is simply above all expectations. The animal reacts almost less than from a simple laparotomy. The next few days they are rather quiet and take very little nourishment. If this keeps on after the third day as a rule there is something wrong, either a pleurisy from which they die in from four to six days, or else there is a beginning leakage from a bronchus, later evidenced by gradual increase in body size and alarming dyspnea. Later there may be an extensive general emphysema.

CAT 49.—Operated on, Oct. 22, 1913. Right lung excised; stump tied with single ligature; died October 29, pyopneumothorax; reopening of bronchial stump.

CAT 50.—Operated on, October 22. Operation as above. Died November 25 from intercurrent disease; slight fluid in pleural cavity which was greatly collapsed; opposite lung normal; heart normal.

CAT 51.—Operated on, October 23; resections of right lung and mediastinum. Killed November 30. Right side only slightly contracted. On inflation lung filled almost both sides.

CAT 52.—Operated on, December 2. Same operation. Died December 16, sloughing of bronchial stump, pyopneumothorax.

CAT 53.—Operated on, Dec. 13, 1913. Excision of right lung. Killed June 10, 1914. Osseous changes slight.

CAT 54.—Operated on, Feb. 27, 1914. Removal of right lung; double ligature of stump. March 21 reoperated on, one lobe of left lung removed; died two hours later from pneumothorax.

CAT 55.—Operated on, March 2, 1914. Operation as above. Left stump treated with Meyer method. Died March 5, from pleurisy.

CAT 56.—Operated on, March 19. Same operation; double ligature of stump. Died March 23 from pleuritis.

CAT 57.—Operated on, April 1. Same operation, but stump covered with lung tissue. Died March 3 from intercurrent disease. Some fluid in pleural cavities, otherwise negative.

CAT 58.—Operated on, April 1. Same operation. Died April 5 from pyopneumothorax; opened bronchial stump.

CAT 59.—Operated on, April 1. Left lung and mediastinum excised and stump covered with lung tissue. Died May 10 from distemper. Slight pleural effusion.

CAT 60.—Operated on, April 21. Same operation. Died April 24 from pleuritis.

CAT 61.—Operated on, April 21. Same operation. Died April 22 from pulmonary embolus.

CAT 62.—Operated on, April 22. Same operation. Willy Meyer method. Killed May 2. Pleural cavity smooth; chest not very much collapsed, if any.

CAT 63.—Operated on, April 22. Same operation. Stump covered with lung tissue. Killed June 10. No collapse of chest. Pleural cavity smooth.

CAT 64.—Operated on, April 28. Same operation. Died May 1 from pulmonary embolism.

INTRATHORACIC SECTION OF TRACHEA

The theoretical indications for a resection of the trachea in the thorax could not be numerous, possibly a stricture or a localized tumefaction. As far as I know this is seemingly the first recorded attempt of such experimental research.

The technical difficulties are great; the dangers are numerous. The shock is far greater and the death rate infinitely higher than in any other intrathoracic operation. A great number of the animals died on the table apparently from respiratory failure in convulsive seizures with extreme opisthotonos strongly resembling symptoms of strychnin poisoning.

Some of these animals we were able to tide over temporarily with prolonged artificial respiration, since we found the heart acting good, although respiration had completely ceased. This respiratory failure might have been a temporary reflex inhibition of the respiratory center, incidental to the cutting of the trachea, especially the posterior fibromuscular part which (in this region) may contain important hitherto unknown nerve-tracts.

This fibromuscular part of the windpipe is undoubtedly of special importance in bringing about certain contractive motions of the trachea, as in excessive expiratory efforts I have seen the tube contract and then the ends of the tracheal rings were closely

29. Carrel: Ann. Surg., i, 83.

30. Meyer, Willy: Pneumectomy with the Aid of Differential Air Pressure, THE JOURNAL A. M. A., Dec. 11, 1909, p. 1978.

31. Robinson: Ann. Surg., 1908, xlvii, 184.

32. Courmont: Compt. rend. Soc. de biol., 1913, lxxiii, 503.

33. Friedrick: Arch. f. Chir., 1908, lxxvii, 647.

approximated and may possibly even overlap. There is really a bow-string action of each tracheal segment. I do not know whether this was observed before. Those muscular fibers between the ends of the cartilaginous bows, however, were not placed there for simple ornamentation.

Except in one or two cats the depression following the operation was very pronounced, and as a rule they were very quiet for the first two days. The cause of death of those that survived the operation was pneumothorax, pleurisy, pneumonia, collection of mucus at site of section, and pulmonary embolism and sloughing of tracheal rings. Out of twenty-five operations we succeeded in saving only one cat—Cat 86.

The thoracic incision was made in the second or third intercostal space and one or two ribs fractured at inner end of wound. The lung was pushed out of the way with sponges, then the trachea was dissected free and raised carefully on blunt hooks. This must be done with care; otherwise the soft coat of the trachea may easily be torn. The tracheal catheter is now pushed beyond the proposed site of section and a catgut thread tied around the trachea above and below. The air-tube is then cut or rings excised by cutting around the catheter and between the rings. The tube is then sutured with interrupted fine silk prepared with petrolatum. Trachea is then replaced and covered with the surrounding areolar tissue.

CAT 65.—Operated on, Dec. 10, 1913. Died Dec. 17, 1913. Infection entering through line sutures, sloughing of trachea.

CAT 66.—Operated on, Jan. 29, 1914. Section of trachea removed from another cat placed around trachea. Died January 30 from imperfect apposition.

CAT 67.—Operated on, Jan. 31, 1914. Died same day. Leakage of air collapsed lungs.

CAT 68.—Operated on, Jan. 31, 1914. Died immediately after operation from respiratory failure.

CAT 69.—Operated on, Feb. 2, 1913. Died February 4 from pneumonia. Lungs highly congested.

CAT 70.—Operated on, Feb. 3, 1914. Died immediately from respiratory failure.

CAT 71.—Operated on, Feb. 4, 1914. Died February 5 from collapse of lung; leakage of tube.

CAT 72.—Operated on, February 5, and died February 6 from pneumothorax.

CAT 73.—Operated on, February 5, and died February 7 from congestion of lungs.

CAT 74.—Operated on, Feb. 6, 1914. Died same evening from leakage and collapse of lung tissue.

CAT 75.—Operated on, February 6. Cat died on table from respiratory failure.

CAT 76.—Operated on, Feb. 9, 1914. Died same night. Embolism of pulmonary artery.

CAT 77.—Operated on, Feb. 9, 1914. Died February 10 from occlusion of trachea with mucus.

CAT 78.—Operated on, Feb. 10, 1914. Died one hour after operation; acted as if it had convulsions.

CAT 79.—Operated on, Feb. 11, 1914. Egg-membrane placed around trachea. Died February 13 from occlusion of trachea.

CAT 80.—Operated on, Feb. 12, 1914. Died on the table from respiratory failure.

CAT 81.—Operated on, Feb. 12, 1914. Surrounding fascia loosened and sutured over trachea. Died February 14; trachea and surrounding tissues looked good; lungs congested.

CAT 82.—Operated on, Feb. 13, 1914. Died February 15 from pulmonary embolism.

CAT 83.—Operated on, Feb. 17, 1914. Membranes and fascia sutured over trachea; ether passed through hot water. Died February 19 from embolism of pulmonary artery.

CAT 84.—Operated on, Feb. 17, 1914. Fascia sutured over trachea; air and ether warmed. Died same day; non-approximation of trachea.

CAT 85.—Operated on, Feb. 17, 1914. Fascia sutured over trachea where sectioned. Died while on table.

CAT 86.—Operated on, Feb. 18, 1914. Fascia sutured over union. Killed June 14. Small adhesion of lung to chest wall. Union of trachea perfect, only slightest contraction at site of anastomosis. Small spot of granulation tissue on the mucosa interiorly. Cat was in perfect condition when killed.

CAT 87.—Operated on Feb. 18, 1914. Ether and air warmed, passing through coil immersed in hot water. Fascia sutured over place of section. Died February 19 from apposition, lumen became plugged.

CAT 88.—Operated on, Feb. 19, 1914. Died Feb. 21, 1914. Became plugged with mucus.

CAT 89.—Operated on, April 16, 1914. Died April 19, 1914. Small quantity of thick pus. One lobe of lung gangrenous. Pneumogastric nerve tied in one ligature.

SUMMARY AND CONCLUSIONS

The death-rate in the heart work was 38 per cent.; in the lung research 50 per cent., and in the tracheal experimentation we succeeded in saving only one out of twenty-five.

Cats without heart-sac show very little, if any, disturbance.

If at the end of an operation on the heart the organ is acting poorly it is almost always fatal to suture the heart-sac.

The making of a new heart-sac from transplanted tissue is not very promising.

Opening in pericardium should not be made too near the base of the heart, as sewing it may cause too much traction on vessels and incidentally on important centers.

Extreme traction on heart is one of the greatest dangers in heart surgery.

Through-and-through aseptic puncture wounds, unless through certain danger regions, create only a temporary disturbance, varying, of course, with the type of the insulting agent and the extent of damage.

Auscultatory findings were few in the operated cat heart.

The marvelous recuperative power of the heart is demonstrated by the recovery from multiple extensive operations on the organ.

The local atelectasis produced by pressure from sponges should be remedied by forcible expansion of lung before closing the chest.

The collapse of the chest wall in unilateral excision of the lungs is somewhat counteracted by mediastinal removal.

Certain contractile movements of the trachea are observed in excessive expiratory efforts.

In section and suture of the intrathoracic trachea a number of animals die from respiratory failure (seemingly reflex).

At the present time some of this research may seem ridiculous and void of all practical application, but surely we are not yet at the end of our resources. The human race is still young, only a few hundred thousand years old, and in untold centuries to come work that now seems unfeasible might then be fairly well mastered.

As we now stand, however, there are manifold dangers to overcome in the chest work, and the indications for surgical intervention in thoracic disorder will have to be a little more clear cut than those on which we now cheerfully invade the right iliac fossa.

I wish to extend my thanks to Dr. A. Rahe and E. Wich-temas and Miss H. Nelson for valuable assistance.

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ABSTRACT OF DISCUSSION

DR. JOHN B. MURPHY, Chicago: I feel that as a prerequisite to graduation, every medical student should do experimental work on the arteries and on the chest cavity. A surgeon has to deal from the very beginning with hemorrhage, with blood. He should become familiar with blood and particularly with the tubes through which blood flows. In 1896 when I did the first end-to-end suture of the artery which had ever been accomplished in a human subject, I had then been working two years experimentally with the blood-vessels. A man can do no work which will give him such poise as that of arterial suture. The work of Dr. Werelius is an inspiration. It is the most important thing that has so far been brought before this section. Why? Because it stimulates us to do new things; to make ourselves familiar with the technical complications and conditions that can arise in so many fields of surgery. There is no question in my mind that it will be but a short time until some of these improbable or even now apparently impossible conditions will be turned to a valuable purpose. When I succeeded in making end-to-end sutures I did not feel that the time would come when a whole day would be devoted to arterial suture as was recently done in one of the great surgical congresses. It is not the individual artery that one wants to or needs to suture, but it is to have the confidence that one is master of the situation and that one can meet any emergency of hemorrhage in a life-preserving way, not alone for the whole body, but for the limb in its proportion. In 1893 or 1894 a surgeon found, in operating on an appendicular abscess, that he was in the external iliac artery. He was a master surgeon; he sutured that artery in the presence of the infection and saved the life and limb of that patient. Conditions of this kind will arise not infrequently and will be of the utmost value to the practical surgeon. I read in an article on the surgery of the chest, that the first lung was opened in 1498 by a bull in Bologna—not a papal bull but an animal. The lung was extracted through the opening of the chest. It was kept outside of the chest, it desiccated and the man survived, and it has taken four hundred years from that time for the skillful surgeon to make himself at all familiar with the removal of the lung, which is not very complimentary to us as original investigators. It is just such work as that of Dr. Werelius that will stimulate us to make the lung and the heart a familiar field for operation.

DR. E. WYLLYS ANDREWS, Chicago: Modern surgery has not lagged behind so much in chest and heart work. I remember the monumental compilation of Ricketts of Cincinnati; I remember that De Forest Willard, in a long series of experiments, demonstrated that it was possible to remove a lobe of the lung, or the whole lung, from an animal and have the animal survive; to open the bronchus in a dog and remove a foreign body artificially introduced. We know the surgery of the mediastinum has been carried as far in the hands of Dr. Willy Meyer of New York as in any clinic in the world. But when we think of the possibilities of lung and cardiac surgery, of cutting down and operating on the lung and the heart, the question arises whether the greatest value we are to get from all this experimental and clinical work is not to be indirect. Whether it will not resolve itself into the question of how to open the chest successfully, how to do it freely and how to handle blood-vessels, as in pulmonary embolism, or the esophagus in cancer. Numerically speaking, the cases of heart surgery will be small and possibly the excision of lungs very rare. Possibly cases of lung surgery will not numerically amount to as much as cases of mediastinal surgery, or opening the bronchi, or of diaphragmatic hernia which are all incidental to our learning how to operate successfully in this line of experimental work. We see how freely we may, even after having seen the work of Sauerbruch, open the chest without the Sauerbruch or any cabinet or differential pressure and without fear of collapsing the lungs. We learn by making a long incision, with powerful retractor blades between two ribs, to get immense openings into the chest and to operate freely in the mediastinum. In a large service in the Cook County

Hospital we have had an unprecedented number of such cases. We have had five patients with congenital stenosis of the esophagus in Dr. Richter's clinic alone. All were operated on and, as it proved, unsuccessfully. We have had several successful cases of resection of the esophagus for carcinoma or stricture. You remember the beautiful work of cutting down on a rupture of the diaphragm and hernia by Cranwell after a stab wound of the diaphragm. I reported five cases: three patients died and two recovered. We have completely changed our idea as to where to cut in these cases.

DR. WILLY MEYER, New York: Dr. Werelius' paper is full of interest. It deals with thoracic surgery from the experimental point of view. I speak from the clinical point of view, concerning surgery of heart and lungs in man. Trendelenburg's operation for pulmonary embolism will, it seems, promise better results, if done under differential pressure with longitudinal division of the sternum (Rehn). Cardiomyolysis for fixation of the heart and pericardium, in a condition usually fatal without operation, can be well done by the same route, particularly in children. Extirpation of the lung in the healthy dog is a simple procedure. The lobes are always separated. After ligation of the blood-vessels the bronchial stump needs air-tight closure. We treat the bronchial stump as that of the appendix—crushing, ligature, top suture—and consider this a safe procedure. Of twenty-one dogs thus operated on we saved seventeen. The resulting cavity in the chest on firm closure remains filled with air, which is gradually absorbed. Frozen sections of dogs killed at certain periods after pneumectomy, the vascular system having been injected with a formaldehyd solution (Dr. Francis C. Wood), have proved this. The gap is slowly filled by the opposite lung, heart and big vessels, and the rising diaphragm. The sick human being, however, is different from a healthy dog. In human beings the sensitiveness of the pneumogastric nerves, also of the sympathetic system needs consideration. Sudden, unexpected, sometimes fatal reflexes occur. We must learn to overcome these. Cocainization promises help. The next difficulty is found with the bronchial stump. There, too, I believe, further practical experience will show that it is best to deal with the stump in man as we have done in the dog, but its mucosa is often infected. It needs thorough disinfection during operation. Lately I had to resect the left lower pulmonary lobe in a woman for multiple bronchial fistulas. Twice she had been operated on in other hospitals. We resected the lobe, taking out a wedge-shaped piece which carried the bronchial fistulas, and closed each remaining portion of the lobe separately by a continuous inverting suture. The patient recovered nicely. One bronchus opening has, it seems, not yet definitely closed. I feel that had I disinfected each of the bronchial lumina during operation before suturing, the one reopening would likely not have occurred. The tendency of the bronchial stump to retract is also important. If there be no adhesions and the stump leaks while the thoracic cavity is closed air-tight, the deadly pressure—pneumothorax—will develop. Postoperative drainage of the pleural cavity will most likely overcome this danger. I believe that more frequent drainage after intrathoracic operation, always of course, on strict indication, will work for more rapid progress, not only after radical operations for lung disease, but also after operations on the esophagus.

The Making of a Good Surgeon.—The education of a surgeon is always incomplete if he is not a good anatomist, physiologist and pathologist to start with, and continues to be so to the end, and it is only by those who will take the trouble to attain and maintain this knowledge that any real surgical advance can be made. . . . The days when surgery was a mere handicraft are past, and to be able to operate well, though a useful accomplishment when properly applied, may make a man a curse instead of a blessing to the community in which he practices.—Rutherford Morison, *Canadian Med. Assn. Jour.*

NERVOUS AND MENTAL DISTURBANCES
FOLLOWING CASTRATION IN
WOMEN*ALFRED GORDON, M.D.
PHILADELPHIA

It is a very well-known fact that ovarian tissue has a certain influence on the development of the body. Removal of the tissue before puberty arrests or prevents the development of the uterus; removal after puberty prevents menstruation. Removal of it is followed by atrophy of the breasts and arrest of general physical development. On the other hand, after removal of ovaries, anatomic changes have been observed in other glands, namely, hypophysis, thyroid, adrenals. In the hypophysis, for example, there is an increase of its size (hypertrophy) with an extraordinary number of eosinophilic cells and dilatation of its blood-vessels.¹ Goldstein² has recently reported a case of acromegaly which developed after castration. In the thyroid there is an increase of the acini, also dilatation of the follicles and increase of the colloid substance.³ In the adrenals hypertrophy has been observed by many authors. The same histologic modifications which are observed after castration in women have been found experimentally on animals.

It is also very well known that after transplantation of ovarian tissue into the abdominal cavity in women previously castrated, the physiologic functions of the genital organs are restored. The latter has also been observed in a number of cases in which castrated women have been treated by opotherapy. Dixon⁴ speaks of great improvement of all symptoms following oophorectomies obtained from the internal use even of small quantities of ovarian tissue. Menopause may thus be prevented.

Whether the disturbance of genital function after oophorectomy is due to the suppression of the internal secretions supplied by the ovaries according to the conception of Brown-Séquard, or to the presence in the ovaries of adrenal substance as Sajous wants it, it is as yet difficult to say with any definiteness. It is equally difficult to estimate the rôle played in the above-mentioned disturbances by other glands, since the latter have been found altered in a large number of cases. The physiologic interrelation between various ductless glands is a well-known fact. In cases of acromegaly and gigantism, for example, alongside the changes in the pituitary gland changes in the genitalia also were not infrequently noted, such as atrophy of testicles or ovaries. Experimental castration has been followed by changes in the hypophysis. On the other hand, we are familiar with the frequent occurrence of enlargement of the thyroid at puberty and pregnancy when physiologic changes occur in the generative organs. The genital organs and the thymus are also physiologically influenced by one another.

In view of this intimate relationship between various glands and of our want of knowledge of the exact significance of the relationship, it is impossible as yet to say with any degree of certainty what particular gland

with internal secretion plays the most conspicuous rôle in the production of certain morbid phenomena, since several of them are altered anatomically at the same time.

As to the physiologic effect of ovarian tissue on the economy, our knowledge is quite limited. From the investigation of Loewy and Richter,⁵ of Neumann and Vas,⁶ Dalché and Lépinos,⁷ of Sauvé,⁸ and a few others we know that ovarian extract is an oxidizing agent; it enhances metabolism, it increases the hemoglobin content of the blood. Robin and Binet have shown that during the physiologic changes in the ovaries, namely, during menstruation, there is an increase of respiratory exchange. This meager information concerning the influence of ovarian tissue on the organism cannot, of course, explain the great variety of morbid manifestations observed during the physiologic menopause or following bilateral oophorectomy. Nevertheless, the fact is that clinically we meet with a certain group of phenomena which are evidently in connection with the female generative organs. Without entering into further discussion of the pathogenesis of these phenomena, which after all will be only speculative, let us consider only the nervous and mental disturbances which I succeeded in observing during the period of several years in a series of 112 cases.

The large majority of patients (eighty-nine) had the ovaries alone removed; the rest (twenty-three) had ovaries and uteri removed. In a certain number of cases (thirty-seven) oophorectomies were performed through errors of diagnosis. As the patients complained of vague neurotic pains in the abdomen and only gynecologists were consulted, the productive genitalia were considered as the direct cause of those disorders.

Let us consider first the latter group of cases.

Thirty-four young women suffering from various manifestations of neurasthenia, hysteria or psychasthenia complained among other symptoms also of vague disturbances in the abdomen. Surgeons at once incriminated the ovaries and removal of the latter was insisted on. The results were as follows: In a small number of cases (nine) there was at first an improvement in the preexisting functional disorders. Rapidly, however, during convalescence following the operative procedures the former conditions returned. In the remaining twenty-five cases there was no improvement whatever. In all the cases the former nervous and psychic phenomena have become aggravated in the weeks and months following the operations.

The obsessions from which several women suffered prior to the oophorectomies became since then more persistent and covered a larger field of morbid ideas than heretofore. Those who suffered from hysterical paroxysms began to have them more accentuated and more frequently. The former neurasthenic individuals developed a deeper asthenic state with a greater number of hypochondriac tendencies than heretofore. Several patients among the psychasthenics became so ill that temporary confinement to institutions was unavoidable. Some of these patients are still seen occasionally by me, but there has been no abatement of the condition; on the contrary, the latter is more

* Read before the Section on Nervous and Mental Diseases at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Cimoroni: Policlinico, 1907, p. 16. Kon: Beitr. z. path. Anat., 1908, xlv, 233.

2. Goldstein: München. med. Wchnschr., April 8, 1913.

3. Cecca: Soc. méd.-chir. de Bologne, 1904. Parhon with Goldstein: Spitalul, 1906, xxvi.

4. Dixon: Practitioner, May, 1901.

5. Loewy and Richter: Berl. klin. Wchnschr., 1899, xxxvi, 350.

6. Neumann and Vas: Monatschr. f. Geburtsh. u. Gyn., 1902, xv, 433.

7. Dalché and Lépinos: Bull. gén. de therap., 1902, clxiii, 10.

8. Sauvé: Paris. med., 1911, No. 45, p. 400.

persistent and more profound, so that at times it appears to make one suspect absolute incurability. Three of this group of patients presented before the operations no distinct symptoms of the aforesaid functional nervous diseases. They complained of vague nervous symptoms, such as frequent pain in the abdomen, back and head, of various paresthesias, of anorexia, constipation or diarrhea. They were referred for their complaints to gynecologists who advised indiscriminately surgical intervention, that is, oophorectomy. The operations were uniformly successful. Shortly after the operations various nervous disturbances made their appearance. Irritability, more or less pronounced; highly nervous state; peculiar and sometimes bizarre relations to surroundings, such as inability to be in accord with others or inability to stand the least contradiction; changeability in the mood at various times on the same day; restlessness, tendency to move about, to travel; great and sometimes extreme tendency to complain about others; finally insomnia, loss of appetite or else voracious appetite; in some cases traces of sugar in the urine—all these manifestations have been observed in the three patients whose previous medical histories showed a total integrity of the nervous system.

In all the thirty-seven cases considered here we therefore find that oophorectomies were followed by decided nervous disturbances of a various character. Either the preexisting morbid phenomena became accentuated, or else new manifestations developed directly on the removal of the generative organs. In this connection it is interesting to note that the removed organs were found to be normal in every one of the cases in which operation was performed. The diagnosis was evidently erroneous. It proves beyond doubt that indiscriminate surgical intervention in cases of vague but persistent complaints of a nervous nature is a wrong procedure which may lead to regrettable consequences.

In the remaining seventy-five cases the reproductive organs were found to be diseased, either on one or on both sides. The surgeons performed in all of them radical operations. Complete hyster-oophorectomies were advised and accepted. Both diseased and healthy portions of tissue were removed. Prior to the operations the patients complained of symptoms, incidental with diseased viscera, such as pain in the abdomen and back, constipation, and general nervousness. The removal of the diseased organs removed the localized discomfort, but in the months following the operations, symptoms of a more distressing nature began to develop. In the largest majority of my patients the former nervousness not only remained but became accentuated. Symptoms observable in neurasthenia, psychasthenia, especially in anxiety neurosis, gradually made their appearance. Insomnia was a prominent feature. Obsessions of various nature were the next pronounced manifestation. They concerned especially fear of death, of becoming insane, of impending calamities. The obsessions existed either single or multiple. Restlessness, discontentment with everybody and everything, tendency to quarrel, to contradict, desire to control, to dominate, are all symptoms observed in some of my patients. In other patients there was actual incapacity for mental work; they were unable to concentrate their thoughts in writing or in conversations; they lost all power of initiative, they lost interest in all absorbing subjects. They knew nothing but their ailments and their complaints.

Some of the patients eventually developed the most pitiful picture: there was a complete loss of desire for enjoyment; they confined themselves to their rooms with not the least desire for outdoor life; their homes were neglected, their children were abandoned to themselves; former clean habits changed radically: untidiness, uncleanness, nonchalance became conspicuous. Another group of patients developed imperative ideas of traveling which were probably due to the extreme restlessness and nervousness. This eccentricity, along with other peculiarities in dealing with the surroundings, rendered the individuals incapable of taking care of their families and of their homes. A small group of patients, after passing through a phase of disturbances as observed in the other patients, gradually developed such a state of mentality that their removal to an institution was found unavoidable. While they presented no delusive ideas, no hallucinations, no evidences of dementia, and no paradoxical reasoning, nevertheless the extreme restlessness, insomnia, anxiety about the future, inability to live peacefully with others and to content themselves with the attention given them by others, the great tendency to quarrel, the episodic outbursts of ungovernable anger with impulses to attack—all these morbid manifestations rendered the lives of those who came in contact with these patients intolerable and isolation of the latter became imperative.

CONCLUSIONS

An analysis of all the cases grouped in my study permits me to draw the following conclusions:

1. Removal of the reproductive organs in women causes disturbances in the domain of the nervous system. These disturbances are of a purely functional nature.
2. The disturbances are somatic and psychic.
3. The psychic manifestations, while individually they belong to any of the varieties of psychoneuroses, nevertheless in their ensemble do not constitute any of the well-established classical forms of psychasthenia.
4. True insanities are not observed.
5. The generally observed symptoms are: restlessness with a tendency to move from place to place; difficulty of self-control; dissatisfaction with all and everything; difficulty of finding contentment in one's own efforts; want of interest in all absorbing subjects and objects; indifference, indolence and pessimism. Sometimes there are outbreaks of anger with a tendency to attack. Among other symptoms may be mentioned: insomnia, gastro-intestinal disturbances of a functional nature, headache, vague pains or paresthesias, also occasionally glycosuria; tendency to obesity is also observed in some patients.
6. While the psychic manifestations are sometimes of a very disturbing nature, nevertheless they do not present the characteristics of genuine psychoses. For example, indifference and want of interest in surroundings lack the depth of those of melancholia or of dementia. Restlessness, which is so frequently observed here, lacks the characteristic features of exaltation in the motor sphere observed in cases of mania. As mentioned above, while individual symptoms of my cases resembled those of psychoses, the entire picture of each case lacked the depth and definiteness of any of the forms of insanity. Some of my patients had to be removed from their surroundings and isolated, not because they were insane in the proper sense of the term, but because of inconveniences caused

by them to others. Besides, the subsequent histories of the last category of patients as well as of any other patient of my entire series proved at no time the existence or eventual development of true psychoses. On the other hand, it is striking that the morbid phenomena persist with a remarkable obstinacy; at times they become more accentuated, at others some improvement is noticeable, but then it is only temporary. Some of my patients have been under observation during a period of ten years and the condition still persists unaltered.

7. Individuals who presented various manifestations of psychoneuroses before they fell into the hands of surgeons, had their psychic phenomena decidedly aggravated after the uteri and ovaries or only ovaries were removed.

8. As in the removed organs healthy portions of tissue were invariably found, it is to be supposed that the removal of the latter is in some relation to the morbid phenomena observed after the operations.

9. The logical conclusion seems to be that one must be very cautious in advising operative procedures on the generative organs and the tendency should be to preserve as much as possible of any amount of normal tissue found in the uterus or ovaries.

10. No operation should be advised on healthy organs if a woman complains of vague nervous disturbances.

. 1812 Spruce Street.

ABSTRACT OF DISCUSSION

DR. WALTER D. SWIFT, Boston: If, as has been lately held, the etiology of dementia praecox shall prove to be a faulty elaboration of the secretion of the testicle, I see no reason why a similar disease in women could not derive its etiology in a faulty secretion of the ovary. I consider that Dr. Gordon has gone far in the determination of this new symptom-complex.

DR. JOSEPH M. AIKIN, Omaha: For the last eight years I have observed just what Dr. Gordon has been telling us with reference to surgery in that class of cases. I tried to collect from my own files and those of some of my associates, sufficient data on which to present a paper on the subject, but the evidence was too indefinite for scientific use. I have experienced the results he has pictured. While hardly germane to this subject, permit a reference to surgery in cases of epilepsy. I have seen a number of cases in which the question has come up of removing the ovaries or the uterus and the ovaries, with the idea of giving the patient relief from the epileptic convulsions. In every case I have insisted that, unless there is pathology in the pelvis warranting surgery without regard to the epilepsy, it should not be done. If the epileptic convulsion occurs only at the time of the menstrual period, relief by surgery is very often obtained. If the convulsion occurs during the intermenstrual period no relief will come to the patient from surgery.

DR. FRANK R. STARKEY, Philadelphia: Dr. Gordon has brought out a point in which I am particularly interested, namely, the multiglandular or polyglandular nature of disturbances of this kind. The terms, "ovarian syndrome," "thyroid syndrome," "pituitary syndrome," etc., will soon pass away. Although any of the organs of internal secretion may be so involved as to make its deficiency most conspicuous; in reality all of these organs are affected when one is involved. When we remove both ovaries, we take away from the woman two organs of generation; but we also take away from her the ability to form the internal secretion of the ovary which is important to her economy and assists in oxygenation and metabolic processes generally. We remove from her the balancing function of the ovary, we rob her of the influence of the corpus luteum, change the chemistry of her tissues, precipitate at once the menopause and the ner-

vous and mental phenomena incident thereto, with a complete change in her entire being. Adynamia and lack of efficiency are the keynote of this condition; relaxed muscles, visceroptosis and mental and nervous depression follow. The condition is always polyglandular. Shall we give these patients extracts or the substance of single glands? No. Shall we give them tablets or other preparations of commerce prepared from the glands of animals raised for food purposes and castrated in their youth to improve the quality of their flesh for eating? No, for these animals are pathologic themselves and their glands are especially deficient. The sooner we recognize that we must always use glands from unsprayed animals and treat the entire chain of glands of internal secretion, the sooner will we treat this class of patients intelligently.

DR. WILLIAM M. LESZYNSKY, New York: About twenty-five years ago, there were a number of gynecologists in New York who were really obsessed with the idea that every woman who appeared with inexplicable nervous symptoms should have her ovaries removed. The result was very disastrous, as many of us remember. Fortunately, such methods in a large measure were soon discontinued. The psychoneurotic manifestations mentioned by Dr. Gordon are unusual or rarely occur after oophorectomy for ovarian disease, unless the patient is of a pronounced neurotic temperament. I had thought that the final words on this subject had been definitely expressed many years ago.

DR. HUGH T. PATRICK, Chicago: My experience confirms that of Dr. Gordon relative to the results which have followed operations on women; but, today, the question is not as to the inadvisability of removing normal organs, but abnormal organs. The natural attitude of operators is this: When there is obvious organic trouble the diagnosis seems to be very simple; the nervous disorder must be due to that organic disease. As a matter of fact, however, that conclusion does not follow. Because a woman has a tear in her uterus, a prolapsed uterus, a retroversion or a cystic ovary, we should not conclude that her nervousness is due to abnormalities in the pelvis. So it is not a matter of operating on normal pelvis, but in pathologic conditions. My experience in most cases of obvious pathologic conditions in the pelvis is that there is very little direct connection between this pathology and the nervous disorder. Those are the cases which need most protection at our hands, because really the up-to-date gynecologist is exceedingly conservative.

DR. ROBERT T. MORRIS, New York: First, we have patients whose condition is that of manic-depressive insanity, particularly with the mild cyclothemias, in which there is pain in the ovaries, especially in the depression stage of the cycle. If these patients are operated on by gynecologists who are not psychiatrists, the patient may subsequently have insanity diagnosed by some one else for the first time, and ascribed to the effects of operation. The depressive phase may have been made more intense by the pomp and circumstance of the operation than it would have been in a mild cyclothemia. We have to distinguish here that particular form of insanity following removal of the ovaries, but not dependent on the operation. In another class of cases in which we have various stigmata of decadence—arrested development, high arch of palate, and others which I do not need to classify here, we have patients in whom, as a phase of their neurasthenic condition, manifestations of pain commonly occur in the ovaries or in the pelvis, or the pelvic ganglia. Now, if we remove the ovaries from those patients we may have, in some patients, the nervous phenomena which have been so accurately described. In another class of patients the removal of the influence of the internal secretion of the ovaries is evidently beneficial to the patient. But we cannot inform any patient or physician in advance in which case the patient will become permanently injured by removal of the ovaries, and in which there will be a good deal of benefit; and I state that fact directly to the physician when these cases are seen in consultation. I do not operate in any such case except after thorough consultation with a competent neurologist or psychiatrist, and for ovaries which are the seat of definite degenerative changes. I have followed many

cases for a good many years, and have found that some improved and some were made worse. It is important to remember that we have fundamentally a patient with a general neuropathic tendency. I have sometimes made ovarian grafts after the ovaries have been removed, and have seen relief from nervousness in consequence. While an ovarian graft is of benefit for a short and sometimes for a long period, we have to deal with the known fact that the tissues of one person are inimical to those of another. Some patients will in a few weeks absorb the foreign graft while another individual is quite tolerant of it and will apparently be saved from the effects of loss of the internal secretion of the ovaries for months or years. Grafting is a matter of comparative tolerance on the part of the tissues of one person toward those of another, when we are trying to overcome the ill effects of removal of the ovarian secretion.

DR. CHARLES R. BALL, St. Paul: The correlation which exists between these various glandular structures is a most intimate and complex one. Thus far it presents, in the majority of the cases, a Chinese puzzle. We are very much in the position of the man who is trying to open a safe without the combination. There is no doubt but that the thyroid and pituitary secretions exercise a restraining and modifying effect on the activity of the testicles and ovaries. Recently I have had under observation the case of a boy 13 years old who, when 11 years of age, sustained a severe accident to his head. He was unconscious for twenty-four hours, complained of pain and headache and still complains of them. The remarkable thing is that, within a period of a few weeks after his accident, he began to take on weight, became sluggish in his habits, would not go out and play as formerly, but would sit inactive and apathetic around the house. His parents tried sending him to school but his teachers reported that they could not get him to study or concentrate. In the fifteen months he has gained 55 pounds in weight. His facial expression, the appearance of his skin and his enormous increase in weight give him the appearance presented by a case of myxedema. His breasts are enormously developed. His abdomen is protruding and the contour of the hips with the layers of fat over them suggest the feminine type. It has been pointed out that sometimes pregnant women have such a coarsening of the lips, the face and thickening and clumsiness in the fingers, as is seen in cases of acromegaly. Also, the eunuch is a good illustration of this influence, for being castrated when young, these individuals sometimes grow to enormous size.

DR. CHARLES H. HUGHES, St. Louis: The expression, *post hoc, ergo propter hoc*, is about the keynote of the discussion. With surgery, until quite recently, finding a local disease, it was the rule to conclude that operation was necessary even though the local disease was only a congestion which manifested itself as a secondary condition in connection with hystero-epilepsy for example. The ovaries can become congested as well as the brain, and I know an individual who defined hystero-epilepsy as ordinary persistent periodic epilepsy in a hysteric, and, finding therewith a congested ovary, he operated on that patient in the hope of curing her hystero-epilepsy, but failed. In the earlier days of the discussion of this subject (and I speak in vindication of my own past record with regard thereto), the *Alienist and Neurologist*, published at that time, took the same attitude of caution as to operation for those neurotic conditions that we are verging toward to-day. We are becoming cautious, and we do not say now that, given a disease of the ovary or of the uterus, *post hoc, ergo propter hoc*, but we make some inquiry as to the other conditions present or antecedent. The suggestion made by Dr. Morris that, in these cases, a neurologist might profitably be consulted, is a pertinent and timely one, and so also a psychiatrist and an alienist might be consulted. The disease that is apparent does not always indicate the brain condition. You hear little now of Baker-Brown or of his method of clitoridectomy. It formerly was claimed by some that oophorectomy was a justifiable surgical procedure if epilepsy was detected because epilepsy was such a grave disease that, whether the ovary was normal or

abnormal, it ought to be taken out. Our surgeons do not practice on that line now.

DR. ALFRED GORDON, Philadelphia: It is important for any medical man to have some knowledge of neurology. Dr. Patrick said that we now see very little of those surgeons who operate on every patient of this kind. My experience has been more unfortunate. Even to-day I see approximately the same thing I saw eight or ten years ago. A great many surgeons, when patients come complaining of pain in the back or abdomen, do not yet consult a neurologist as Dr. Morris would, but at once operate on the genital organs. The belief of the ancients that functional nervous disorders come from the uterus finds its modern application in the work of psychanalysts who will say that sexual traumas have a great deal to do with psychopathic phenomena. It is for the neurologist to express opinions in these matters and to instruct the surgeon how he should go about his work. Dr. Leszynsky well said that surgery in these cases should be the last resort.

Dr. Patrick stated that even if a patient has a tear or prolapse of the uterus or disease of the ovaries, this does not mean that the pain and *bachache* and headache and neurotic phenomena belong to the uterus or ovaries. Certainly not. The surgeon does not know all that enters into the make-up of the individual; he does not know under what circumstances the condition has developed. Dr. Patrick also spoke of removing healthy or diseased ovaries. Every patient who presents herself to any medical man complaining of pain in the back or side or in the abdomen should not be operated on immediately. Whether or not a woman who is already suffering from a psychosis should have her reproductive organs operated on for the cure of the psychosis, there is to-day a tendency on the part of many surgical men of eminence to operate on these patients. I have seen cases of that kind. In fact, a surgeon-in-chief of a hospital for the insane in Paris is one of those claiming that maniacal depression and excitement can be removed by operative procedure on internal organs. On reading the cases in detail, however, you find that he fails to recognize that there is any relation between the indication for operation and the depression or whatever other form of psychosis the patient suffered from. The object I had chiefly in view was to induce neurologists and psychiatrists to express an opinion on this important subject. The plea that I make before the profession is that in every case when a woman complains of vague or nervous or psychoneurotic symptoms, operations should not be done hastily.

TUBEROUS SCLEROSIS AND OTHER UNUSUAL FEATURES OF EPILEPSY*

N. S. YAWGER, M.D.

PHILADELPHIA

Although epilepsy is a most ancient disease, our knowledge of it in many respects is quite meager. And yet one of the greatest advances ever made in neurology was made with the establishment of the type of this disease which we know as jacksonian epilepsy. While the recognized manifestations of epilepsy are very numerous, there is still much of its etiology that remains a mystery. Of vast importance in the development of many cases is heredity, but the precise extent of the part this plays must always remain uncertain. In some instances we are confident that the cause is encephalitis dependent on the infectious diseases and sometimes it is due to traumatism, syphilis or brain tumor. Occasionally epilepsy is

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* From the Pennsylvania Epileptic Hospital and Colony Farm and the Department of Neurology of the University of Pennsylvania.

observed to follow fright or other mental shock, but the manner of such influence we cannot understand except as it acts on an individual who is a potential epileptic. Another interesting group of cases are those reported as exhibiting a variety of attacks, at times even said to be major, minor and psychic, which can in no wise be distinguished from those of epilepsy, but in which the attacks lessen or cease after the correction of some abnormal body condition as in intestinal intoxication. Since it is but seldom that an addition is made to our knowledge of the etiology of this disease, the matter of doing so seems deserving of more than passing notice. It now appears that tuberous sclerosis is the pathologic basis for a few cases of epilepsy.

For our first anatomic knowledge of tuberous sclerosis of the brain we are indebted to Bournville, and the appearance presented by the unhardened tissue is that of markedly indurated areas of sclerosis which are slightly elevated beyond the surrounding brain substance; in addition there are sometimes found small tumors protruding into the ventricles. Tuberous sclerosis in connection with glial formation may present the common picture of brain tumor.

Recently Schuster¹ has made the clinical diagnosis in some of the feeble-minded and epileptic. Eight cases were reported, one of which came to necropsy. The identity of the disease in these cases he bases on the finding of adenoma sebaceum on the face, together with small angiomas, the latter appearing chiefly at the sides of the nose and on the chin; other cutaneous anomalies may be present. At times the internal organs, especially the heart and kidneys, are invaded by small growths which may give rise to some of the symptoms found in the chronic disorders of these organs. The skin manifestations may to a less extent be met in some of the blood relatives. One man was seen who showed typical adenoma sebaceum without any other appearance of disease, but he had a daughter of 6 years who was an epileptic imbecile. Schuster states that tuberous sclerosis must be interpreted as a conditionally, endogenous, hereditary family disease. He furthermore refers to a relationship with Recklinghausen's disease and says that while tuberous sclerosis involves chiefly the brain and skin, in neurofibromatosis it is for the most part the peripheral nerves that are implicated.

More recently, however, Nieuwenhuijse,² in studying the question of a relationship between these two diseases, writes that their clinical appearance and also their anatomic changes are entirely different, that the skin fibromas which occur in both affections have their own individuality, and that when the brain is involved in Recklinghausen's disease, there is found a series of absolutely typical changes which are in no wise like those found in tuberous sclerosis.

Sailer³ in 1898 recorded the finding of hypertrophic nodular gliosis in the brain of an epileptic idiot, and Munson⁴ in 1912 reported his findings in an infant of 27 months who clinically showed only seizures and possible mental enfeeblement. At necropsy, he says, "Throughout the cerebrum are foci of hardening corresponding to single convolutions or to groups of convolutions. These are much harder than the intermediate cortex, and in places seem to be so hard as to

be almost 'bony' to the touch." Munson, on anatomic grounds, placed the case with the true multiple sclerosis. From the descriptions given by these writers I think it highly probable that both brains showed areas of tuberous sclerosis. I am not aware of any case that has been reported in English literature in which the clinical diagnosis of tuberous sclerosis has been made.

We have two patients at the Oakbourne Epileptic Colony which present the features described by Schuster in some of his cases. In neither of them has there been evidence of focal involvement of the brain. It is regretted that a complete family study has not been possible, but one patient is from a distance, both are of foreign-born parents who are very ignorant, and as a result our information in this respect is very fragmentary.

CASE 1.—The first patient is a girl of Italian descent, aged 14, whose attacks began at 7 years. She is one of six children, and the others, it is stated, are healthy. She was never robust and is said to have had rickets in infancy. Mentally, she is an epileptic imbecile and temperamentally she is morose and abnormally sensitive. The seizures are major in type, and three and one-half years ago she had status which lasted eleven days. Physically, her appearance is somewhat grotesque with a possible element of achondroplasia. There is also something suggestive of cretinism, and with this thought in mind we placed her on thyroid extract. For a time decided improvement was made and this was manifested in various ways, in six months she gained 15½ pounds in weight, there was an increase of 2 inches in height, she was less irritable and much more alert mentally, and while there were on an average of twenty-five seizures a month before the administration of thyroid, during this treatment for a period of six months she was free from attacks; unfortunately, she relapsed. This individual (Fig. 1) is small in stature, her legs are abnormally short and her hands reach almost to the knees; she is loose jointed, shows marked lordosis and has a protuberant abdomen; her features are thickened and the thyroid is not palpable. The pulse-rate is usually from 90 to 100 and the specific gravity of the urine is always low, sometimes not more than 1.002, but without albumin or casts. She is surprisingly tolerant of cold, never appearing uncomfortable even though thinly clad in the coldest weather.

The following very complete dermatologic report is by Dr. O. H. Foerster: On both cheeks, grouped above the nasolabial furrows, are numerous small, pin-head to wheat-grain-sized papular tumors, discrete and confluent, firm, with convex summits, and of brown and yellow-red color. The larger growths are associated with well-marked telangiectases and on pressure are yellow-red in color. The remaining portions of both cheeks are clear, except for several similar isolated lesions of half-pin-head size. On the chin are about twenty similar discrete lesions of less than pin-head size.

Both alae nasi, and tip and dorsum of nose are practically covered by waxy or translucent, pink to yellowish, elevated, convex, closely set and confluent, papular growths of firm consistency. Several are associated with telangiectases, though less developed than on the cheeks. Similar, more rudimentary lesions of less than one-quarter pin-head size, and yellowish in color, are situated on the upper lip. In both nasolabial angles the lesions are more prominent and grouped, so as to give a verrucous appearance. On the left upper eyelid are several tiny lesions with color of normal skin.

On both sides of the forehead, extending toward the eyebrows from just within the hair-margin, are two elevated tumor masses of irregular outline, light yellow-red in color, with smooth flat surface except for several shallow clefts or furrows. The entire right temporal region down to a line between the outer edge of the right eyebrow and the right ear is occupied by a firm growth with irregular margins, of

1. Schuster: *Deutsch. Ztschr. f. Nervenheilk.*, 1913, p. 96.

2. Nieuwenhuijse: *Ztschr. f. d. ges. Neurol. u. Psych.*, orig., 1914, xxiv, 53.

3. Sailer: *Jour. Nerv. and Ment. Dis.*, 1898, p. 403.

4. Munson: *Jour. Nerv. and Ment. Dis.*, 1912, p. 251.

yellow-red color, lobulated on deep palpation, and of verrucose appearance. Embedded in the scalp at the right parietal region and at the occipital protuberance are two firm, ovoid, elevated masses of finger-nail size. On the neck are several small dark, pedunculated fibromas.

The middle third of the forehead is studded with comedones. The tongue, buccal and labial mucous membranes are normal. The lobes of both ears are abnormally large.

The extensor surface of the arms and dorsum of hands, from knuckles to above the elbow, is of light brown color, sprinkled plentifully with pin-head and slightly larger non-pigmented areas, with irregular, white patches of finger-nail size at the elbows and on the radial side of the right wrist. On the dorsum of the right wrist, on the radial and ulnar side, are two irregular, scar-like, slightly elevated lesions, with a "knitted" appearance, and spots of light-yellow to brown pigmentation. Palms and finger-nails are normal; hair-growth is normal.

Both legs are darkly pigmented, especially at the knees, and show several areas of entire loss of pigment, from finger-nail to small palm in size.

The skin of the back is of darker color than normal, with a moderate eruption of acne on the shoulders, upper back and in the sacral region. On the right shoulder is a group of three fibromatous yellow-red growths. Arranged irregularly in a belt-like manner just above the hips are several flat fibromas.

CASE 2.—The second patient is a girl of Slavish parentage, aged 15. It is said that her father has some curious markings on his face and that he has periodic headache and fainting-spells. A paternal uncle also has attacks of headache. At 3 years this girl was hit on the head by a ball and was unconscious for a time. Her attacks began at 4 years and her rank is that of an epileptic imbecile. For a time the seizures occurred daily but gradually they became less and less frequent and now she is for months without attacks. This individual presents several unusual features. Her voice is peculiar, sometimes it is feminine in pitch, at others masculine and again it will "break" as is common with the male voice at puberty. Though she had many major attacks previous to her admission to the colony, during her stay of two and one-half years with us, she has had only three complete epileptic seizures. Twice there have been vasomotor discharges in the form of intense redness which has covered all exposed parts of the body. Ten paroxysms of uncontrollable laughter have been recorded and three of these have occurred during sleep. There is a cartilaginous thickening of the left ear which has probably resulted from a hematoma auris. The palatal arch is high and narrow. This patient (Fig. 2) is markedly stoop-shouldered, she carries her head far forward and has a decidedly ungainly gait.

Dermatologic report by Dr. Foerster: In the flush area of the face, arranged with considerable symmetry, and grouped especially in the region of the nasolabial furrows and on the chin, are numerous pin-head and slightly larger tumors, many with telangiectases on their summits. They resemble in every particular the lesions described in Case 1, but are in general more rudimentary, though equally characteristic. Similar pigmented patches and flat nodular fibromas are present, though fewer in number and smaller. In addition there is a large flat nevus of the size of an adult's palm to the right of the lumbar spine.

SOME UNUSUAL ETIOLOGIC FACTORS

A remarkable cause of epilepsy is mentioned by Oppenheim⁵ as having been observed by Marburg. It occurred in an individual after eating for many years from 1 to 1½ ounces of roasted coffee-beans a day. I have recently examined a patient in whom the exciting cause was most unusual. A man aged 20 of good heredity and correct habits had his first seizure immediately after a drive of several hours' exposure

to a temperature of 20 degrees below zero. He now has attacks every month or two and is an undoubted epileptic. What change was brought about by this exposure we do not know, but perhaps it only aroused a slumbering epilepsy. The disease sometimes follows an electric shock, and Jolly⁶ has recently recorded the instance of a motorman 20 years of age and previously healthy who on climbing to the top of his car came in contact with the charged pole; he was rendered unconscious. The next day he had pain in his head and fourteen days later there was an unconscious attack; after this there appeared complete epileptic seizures. It is admitted that the electric current may have been only the exciting cause. Spratling⁷ speaks of a man of 32 years who had never had convulsions but who became an epileptic after receiving an electric shock. It is not stated that he was rendered unconscious by this shock.

In a patient recently seen there must have been some actual destruction of cerebral tissue. It was a patient of Dr. Henry Pleasant's, aged 26, and an electric worker; he came in contact with an alternating street current and was rendered unconscious. Later it was observed that he had a hemiparesis involving the right face, arm and leg. Following this was severe headache and at a time impossible to determine definitely, he began with minor attacks and three years after the shock he was having complete epileptic seizures.

Severe injuries from electricity usually cause death, and from the non-serious ones a good recovery may generally be expected. The changes most frequently observed in the brains of criminals who have been electrocuted are capillary hemorrhages, arterial anemia and venous congestion; more or less destruction of nerve-cells has been reported by one writer.

Gowers⁸ speaks of the influence of light as exciting seizures in rare instances. He refers to two cases, one a girl who had just recovered from typhoid and whose first fit occurred immediately on going into the bright sunshine. At no other time did she have attacks. The other was a man whose attacks were always brought on by looking at a bright fire. Gowers states that the discharge apparently began in the visual center. A somewhat similar effect is seen in one of our cases. It is that of a young man whose face and neck muscles are thrown into most vigorous clonic contractions whenever a bright light falls on his eyes. At times the head is thrown backward violently and it may be held there as much as thirty seconds. Rarely, these clonic movements pass into complete epileptic seizures, but nearly all of his major attacks appear precipitately. Very rarely there is spontaneous recovery from epilepsy. The following case is one in which all motor manifestations ceased but a paraplegia persisted: A boy at 2 years developed fever, was nauseated, had general convulsions and then the right arm and leg became helpless. He probably had an attack of acute poliomyelitis. The right arm and leg remained spastic, and jacksonian convulsions were manifested from time to time until 13 years, when the attacks ceased spontaneously. They stopped, strange to say, at an age when epilepsy is very prone to begin. He has now been for eleven years without attacks.

The next case is one in which jacksonian convulsions developed into or at least were masked by com-

5. Oppenheim: *Lehrbuch Nervenkrankheiten*, 1913, p. 1590.

6. Jolly: *München. med. Wchnschr.*, 1912, p. 1453.

7. Spratling: *Epilepsy and Its Treatment*, 1904, p. 124.

8. Gowers: *Epilepsy and Other Chronic Convulsive Disorders*, 1885, p. 75.

plete epileptic seizures. The patient is rather remarkable because of the great variety of nervous phenomena displayed. This girl probably also had an attack of acute policephalitis at 2 years. In the month of May she had fever and convulsions and lay unconscious for a week. On regaining consciousness it was observed that there was disability of the right face, arm and leg. For three weeks the child seemed aphasic; at first she did not talk at all but soon learned again. From time to time slight motor disturbance occurred on the right side and at 10 years the child was placed in a home for crippled children. When she began to use her pen, which she held in her left hand, she wrote mirror-writing; it was with difficulty that the child learned to write correctly. By this time there were pronounced jacksonian seizures and at 14 years attacks developed in which the convulsions were general and the unconsciousness absolute. The patient's acute illness in infancy was followed by aphasia, right hemiplegia, jacksonian convulsions which developed into complete epilepsy, and she also exhibited athetosis, associated movements and mirror-writing.

Another patient is an epileptic girl with myoclonus and recurring sighing manifestations. Her age is 13 and the attacks began at 3 years without obvious cause. The seizures are both major and minor. There is often observed a distinct bodily movement in an arm, a leg or the head and sometimes the shoulders are shrugged. In addition there are less-marked contractions of the muscles in the face and in other parts of the body. All of these movements may be observed during sleep. The patient often sighs deeply both when asleep and when awake. There are at times diaphragmatic spasms. The myoclonus is always more marked after seizures. There are likewise lesser movements that may be felt but not seen. At all times by grasping an arm or leg, a distinct muscular contraction may be felt within the part and the feeling transmitted is that of throbbing or pulsation.

SLEEP AND EPILEPSY

The relation between sleep and epilepsy is most curious and interesting. Most epileptics after a complete attack have a temporary awakening and from this they usually drop into deep sleep. Rarely, this sleep is absent as shown in the following case: A girl aged 18 had her first attack two days after the burial of her mother. She is now 33 years old and has many short but severe attacks. She injured herself so often and so badly that for a long time a protector was worn on her head. The seizures are both nocturnal and diurnal, but now for some months all attacks have been confined to the periods of sleep. This patient has never slept after an attack and even though the seizure occurs during the deepest sleep, she invariably awakens at once and remains awake from a half to two or three hours.

In some individuals sleep is the only known cause of recurring attacks. It is said that in most epileptics the seizures have begun during sleep, that often it is in the deepest sleep that a paroxysm occurs and that more attacks take place when asleep than when awake. There are momentary losses or absences which have

the appearance of sleep, but they are something more than this, for attacks of some kind are frequently seen while these individuals are actually asleep. Besides, if stuck sharply with a pin while in such attacks, unconsciousness as a rule is uninfluenced; any other person at such a time would awaken at once. Such seizures resemble more nearly the disturbance of consciousness seen in cardiac syncope. In connection with this subject, I have observed a very curious case. It was a girl of 19 years whose attacks began at 10 years without known cause. She has major and minor epilepsy with seizures occurring eight or ten times a day. She also has hallucinations of sight and these usually appear just before her attacks. This patient is very drowsy and if permitted, would sleep as much as fifteen hours out of twenty-four. She always takes several naps during the day and will even fall asleep while scrubbing the floor. At one period of about a month's duration, she appeared to be passing into sleep incessantly; all day long she would begin to doze and then promptly recover herself; and this



Fig. 1.—Epileptic imbecile showing sebaceous, angiomas and tumor masses.



Fig. 2.—Epileptic imbecile showing the same condition as in Figure 1, though more rudimentary.

happened several hundred times a day for several days. Considering her drowsy condition, it is difficult to know where to place this phenomenon. Was the manifestation psychic attacks of epilepsy, was it narcolepsy or was this individual an epileptic exhibiting attacks of narcolepsy?

SO-CALLED NON-EPILEPTIC "ABSENCES"

Friedmann⁹ asserted that certain cases previously classified as showing petit mal were really instances of non-epileptic "absences," and furthermore stated that such seizures probably had no relation to hysteria. He described fifteen personally observed cases and regarded the seizures as narcoleptic in nature. This subject has recently been referred to in this country by Sedgwick.¹⁰ In this connection Gowers¹¹ states that "before fifteen cases of narcolepsy were met, 30,000

9. Friedmann: *Deutsch. Ztschr. f. Nervenheilk.*, 1906, p. 462.

10. Sedgwick, J. P.: *Spasmophilia with Especial Reference to Familial Reactions and Repeated Absences*, *Am. Jour. Dis. Child.*, February, 1914, p. 140.

11. Gowers: *Borderland of Epilepsy*, 1907, p. 116.

cases of epilepsy would come under observation! Most of these cases were probably minor epilepsy." The features of this disorder are, according to Friedmann, attacks which usually begin between the ages of 4 and 7 years in apparently healthy children; they consist of a momentary disturbance of consciousness and almost without convulsions or falling; they recur from six to ten and up to 100 times a day; it is only occasionally that they appear at night and frequently they are recovered from; the physical and mental development of the child is not affected.

I have studied two such cases. The first is a girl aged 14 whose attacks began at 9 years without obvious cause. The seizures vary in number from six to thirty per day and are of from ten to fifteen seconds' duration. This momentary disturbance of consciousness is not preceded by an aura; never has there been a convulsion. This girl is healthy, growing rapidly, unusually active and has the mentality of a normal child. So far she conforms to the description of Friedmann's cases. But on further careful study, many attacks are seen while she is asleep; she was once known to fall and in a number of attacks has wet her clothes. If sitting and caught at the time of a seizure her arms and legs are found to be slightly rigid; but if walking she continues though sometimes with slight wavering; occasionally, the movements of tasting are seen. After some of the seizures there is an action suggestive of straightening out the clothes, and this we know is common among epileptics.

The second patient is a girl of 16 years whose so-called "absences" began at 6 years without obvious cause. The attacks usually vary from six to ten per day but they have gone as high as 100. The usual duration is from fifteen to twenty seconds. There is no aura and while she is generally unconscious, some seizures are so light that they are barely apparent even while one is watching her. She also is healthy, is growing rapidly and is of average mentality though somewhat peculiar. During the nine and one-half years of the disease there have been two convulsive attacks with complete loss of consciousness. If spoken to while in a spell there is no response; if struck sharply with a pin at the beginning of an attack, the seizure is aborted; but if fairly under way the hand is drawn from the irritation although she has no subsequent knowledge of having been struck. There is an occasional drowsy episode during which time the patient can hardly be kept awake. Since the age of 14 a very interesting feature of her clinical history is recurring attacks of complete migraine; these usually appear three or four times a month. The intelligence of this girl has made her description of the attacks interesting. The migraine is preceded by the appearance of a bright light before one or the other eye but never before both in the same attack. This light is shaped like the flame of a gas-jet with a serrated upper edge and an attenuated extremity which always points to the outer side and which the patient speaks of as the "tail." The light lasts about twenty minutes and before it disappears headache begins; this is always preceded for about a minute by double vision. The headache usually persists for a half hour and frequently there is nausea and vomiting. When the attack subsides she feels perfectly well except for extreme weakness.

I believe the "absences" in these two cases are best classified as momentary psychic attacks of epilepsy. It may be that Friedmann and others have regarded

the motor manifestation as the cardinal symptom in epilepsy, whereas the disturbance of consciousness is now generally accorded first place.

It is obvious that a great variety of momentary phenomena important in the matter of diagnosis may be lost unless the patients are constantly under the care of trained and observant attendants.

To me, the conclusion that these two patients are epileptics is inevitable.

The last patient has associated with her epilepsy attacks of migraine. As to the relation of these a wide difference of opinion exists; but some light should be thrown on this question by a careful study of the cases in which there is a clinical history of both affections.

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ABSTRACT OF DISCUSSION

DR. ALFRED GORDON, Philadelphia: Were roentgenograms taken of the skulls? Roentgenograms may reveal changes in the skull similar to those on the skin.

DR. WILLIAM G. SPILLER, Philadelphia: I am glad Dr. Yawger has reported on this subject, because, as he has said, there is nothing in the English literature with regard to it. Those who are familiar with Schuster's report will recognize that the two cases presented by Dr. Yawger are exceedingly like those of Schuster. If we can establish the existence of tuberous sclerosis by the means Dr. Yawger has mentioned and make a diagnosis in epileptic cases, we have made a distinct advance.

DR. N. S. YAWGER, Philadelphia: Replying to Dr. Gordon's question, I would say that we have not made any Roentgen-ray studies in our cases.

A NEW METHOD OF TREATMENT OF LUPUS VULGARIS*

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CINCINNATI

In 1911 I¹ published a short monograph covering a brief clinical experience with trichloracetic acid in concentrated form. Reference was made to the fact that this time-honored and more or less generally employed nose and throat remedy had received little favorable notice as a therapeutic agent in dermatology.

Lanz,² in an article on the topical application of 20 per cent. trichloracetic acid by means of an endoscope in chronic urethritis, incidentally refers to the success attending its use in papillomas, warts and pigmentations.

In the monograph above referred to, I set forth the success which attended the treatment of moles and circumscribed pigmentations, vascular nevi and telangiectases and warts and papillomas, with a saturated solution of trichloracetic acid, and incidentally mentioned that immediate favorable results were also noted in lupus vulgaris and several other affections. I have continued to use this remedy with unfailing benefit in all cases of lupus vulgaris and tuberculosis verrucosus cutis which have come to my notice within the past three or four years, many of which have proceeded to complete clinical recovery. These cases form the basis for the presentation of this paper.

* Read before the Section on Dermatology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Heidingsfeld, M. L.: Arch. d. Dermat., 1911, ex, 245.

2. Lanz: Monatsh. f. prakt. Dermat., 1891, xiii, 272.

In spite of the innovation of many new and successful features in recent years, in lupus therapy, no single remedy or well-defined plan of treatment of lupus vulgaris has thus far found general or universal favor. Authors and investigators have exploited their particular views from time to time, expressing their



Fig. 1 (Case 1).—Patch of lupus on left cheek, of forty-two years' duration.

predilection for this or that special form of treatment, but always with a considerable degree of reservation, in reference to the completeness of immediate results and absence of relapses. This conservatism has resulted in the conservation of all the generally accepted old and new methods of successful treatment in the monographs of nearly all who have written on the subject in a text-book or general way.

Of noteworthy interest in this direction is the fact that a commission appointed by the German government in recent years, for the purpose of studying the cause, prevention and cure of lupus, set forth in a report³ in May, 1910, that all hitherto accepted methods of successful treatment such as the application of astringent, stimulating and erosive pastes and ointments, the use of the Roentgen ray, Finsen and Kromayer light, radium and mesothorium, the various forms of surgical procedure after the method of Lang and others, should, at least for the time being, be retained. The same commission in an earlier report, in November, 1908, stated that there were 11,354 recorded cases in Germany at that time, and estimated the total number for the empire, after making due allowance for the unrecognized, undiagnosed and non-reported cases, to approximate 33,000 cases.

The treatment therefore laid down for lupus vulgaris, like all things in medicine without a specific and unfailing medication, embraced a sea of remedies and methods in which the patient and physician are

often hopelessly engulfed. It includes, on the one hand, all forms of palliative and mildly stimulating remedies such as diachylon, oleate of mercury, salicylic acid, resorcin, ichthyol lotions and ointments, etc.; on the other, such caustic erosive and destructive agents as lactic, sulphurous, nitric, pyrogallic and arsenous acids, Vienna paste, acid nitrate of mercury, silver nitrate, caustic potash, etc. In addition to these and numerous other agents, tuberculin, the application of Roentgen rays, radium, Finsen and Kromayer light, Hollander superheated air, Paquelin and galvanocautery, carbon dioxide snow, curettement, linear scarification and radical extirpation, and various other procedures have been, and continue to be, exploited from time to time. Each and all have received at one time or another a generous degree of recognition, and are to this day more or less universally used with at least a very fair degree of success. Without question, many of these old and time-honored measures are not without virtue, but if any of these, new as well as old, possessed overshadowing and unfailing properties, the vast majority would long ere this have been relegated to the discard. Time will not permit me to enter into a detailed consideration of their respective merits or relative worth.

It is possible that I am adding another remedy, or at least another method of its application, to the already too long list of "tried and found wanting," but several years of patient study and observation have led to the conviction that it is not only far superior



Fig. 2 (Case 1).—After treatment.

to any method of lupus treatment which has thus far come to me in my personal experience, but apparently quite the equal, if not superior in results, to those which I personally observed in Copenhagen, Stuttgart, Vienna, Paris and elsewhere. Unless I err in judgment, the results which I have thus far attained compare most favorably with those which I have

3. Nietner: Strahlen Therapie, 1913, ii, No. 1.

observed from other generally accepted successful methods, embracing in a measure their special advantages, and circumventing many of their objectionable features.

For example, the cosmetic result is invariably excellent and as perfect as the physical conditions at the time treatment is instituted can reasonably justify.



Fig. 3 (Case 2).—Patch of lupus on left cheek of six years' duration, before treatment.

The cosmetic results compare most favorably with those observed at the Finsen Institute at Copenhagen and those of the quartz-mercury lamp, both generally conceded to be of the highest order. They are better than those generally obtained from the Roentgen ray, radium, mesothorium and thorium X, particularly when the application of these agents is followed by atrophic scars. The patients are also spared the unpleasant and at times persistent and very painful dermatitis which these agents call forth. The cosmetic results are superior to the good results which I have observed at the hands of Veiel of Stuttgart, a master in the successful use of pyrogalllic acid paste; the method is devoid of the pain, discomfort and disagreeable features of the pyrogalllic acid method of treatment. The cosmetic results are far superior to those obtained from the use of caustic and destructive and erosive substances, scarification, curettement and excision, after Lang's, Payer's and other methods.

The treatment is far superior to most of the enumerated methods, in that it entails no cost in equipment and can be readily adapted to meet all the exigencies of every form of practice. The results assert themselves with surprising promptness; improvement is almost invariably noted within a few weeks, and a cure in the more moderate cases is effected within six months or a year. This compares favorably with all other methods, with the exception

of a radical operation, and is second only to radium and its allied radio-active substances.

The pain and discomfort is of momentary and transient character, a sense of slight burning and stinging, readily tolerated by children as well as adults. Successfully treated patches of lupus which are smooth, devoid of scales and roughness, and show no congestion or nodules under glass-slide pressure, remain, as well as the still somewhat limited period (two years) permits judgment, permanently well and show less tendency to relapse than I have observed from light and radium treatment. Particularly noteworthy is the fact that the actively spreading and usually very persistent borders respond with almost as much promptness as the partially cicatrized centers. Relapsing nodules in partially or neglected treated patches respond with every degree of promptness when treatment is reapplied.

METHOD OF TREATMENT

A saturated solution of trichloroacetic acid is obtained by adding 10 drops of distilled water to an ounce of pure crystals. A tiny pledget of cotton is carefully wrapped around the end of a small rounded wooden toothpick, by means of which the remedy is applied as far as practicable, to each congested nodule. The remedy apparently exerts a selective action, attacking the nodules with greater promptness and sparing somewhat the intervening more normal or



Fig. 4 (Case 2).—After treatment.

cicatrized areas. This selective action is also noted if the remedy is applied more or less diffusely to a generally congested surface, although better results are usually obtained if it is carefully applied to the individual nodules for a few seconds at a time. The application produces a momentary sense of discomfort and stinging, which can be promptly allayed by the application of the following:

Sulphurated potassa.....	1 part
Zinc sulphate, of each.....	10 parts
Zinc oxid	15 parts
Lime-water	40 parts
Distilled water, enough to make.....	
Powdered carmin, enough to color pink.	

This application serves, in addition to its protective and healing properties, as a cosmetic to hide the glar-



Fig. 5 (Case 3).—Partially cured by treatment.

ing whiteness produced for the time being by the trichloracetic acid. The trichloracetic acid should be applied to areas not much larger than a silver quarter, at a time, and repeated at seven- to fourteen-day intervals. Under the treatment the nodules become the seat of superficial crusts which exfoliate within from five to ten days. The general congestion diminishes, and the nodules lose in intensity of redness, and rapidly diminish in size, until they gradually become no larger than pin-heads and ultimately disappear. Mucous membrane lesions on the lips and within the nose have yielded with equal promptness and success.

CASE REPORTS

CASE 1.—C. L., shoe manufacturer, aged 44, large circular patch of lupus covering almost entire left cheek, present from early childhood and slowly extending until nose and lips were encroached on. Unsuccessfully treated a number of times by means of pastes, curettement, Roentgen ray and light. Surgical extirpation was at one time recommended. Patient no longer entertained any hope of relief and for the past few years merely employed cosmetics to hide the physical disfigurement. Treatment was instituted Oct. 4, 1913. Thirty-two applications have been made and patient pronounced clinically well, May, 1914.

CASE 2.—B. S., aged 16, Roumanian, patch of lupus size of a twenty-five cent piece, on left cheek, near nose; duration six years. Trichloracetic acid treatment instituted April 20, 1913. Improvement noted within two weeks. The remedy was applied, all told, fourteen times and patient was discharged well, Oct. 4, 1913. No relapses at present writing.

CASE 3.—Mrs. R. A., aged 35. Triangular patch of lupus on left cheek anterior to right ear, $1\frac{1}{2}$ by $1\frac{1}{2}$ by $\frac{1}{4}$ inches, of twenty years' duration. Varied attention from various physicians, unsuccessful. Trichloracetic acid first applied Jan. 4, 1913, and patient discharged well, April 9, 1914.

CASE 4.—Mrs. A. E. H., widow, aged 52, lupus vulgaris twelve years' duration, involving nose, right cheek and right eyelid. Treatment instituted April 16, 1914. Material improvement noted June 10, 1914.

CASE 5.—E. J., aged 23, lupus vulgaris present from early childhood. Large patch covering the larger portion of the left cheek, extending from the anterior border of the left ear, almost to the left eye and nose, involving the lips and left side of mouth, and extending over the neck from the chin to the angle of the jaw. Tuberculin, Roentgen ray, Kromayer quartz-mercury lamp, pyrogallie acid, caustic and stimulating pastes were all used to no avail. The Roentgen ray effected some temporary improvement but also a very serious degree of severe atrophic disfigurement. The Roentgen ray was unable to check recurrences. Trichloracetic acid was first applied, April 21, 1911, and the case was brought under excellent clinical control, although not radically cured, owing largely to apathy on part of the patient, in March, 1912. The mucous membrane lesions yielded with surprising promptness. A few recurrences have manifested themselves from time to time, particularly in the parchment-like Roentgen-ray atrophies. On date of last visit, April 17, 1914, patient's condition was under favorable control.

CASE 6.—J. C. D., aged 32, organist, lupus of left foot of ten years' duration, which resulted in entire destruction of large toe and necrosis of distal phalanx of second toe. Vocation seriously threatened and for the time being, impaired.



Fig. 6 (Case 3).—Treatment discontinued.

Trichloracetic acid first applied Oct. 29, 1913. Greatly improved and vocation resumed, November 24. Case greatly improved but still under observation at present writing.

CASE 7.—Mrs. G. E., aged 41, wife of physician, small patch of lupus vulgaris, size of a silver dime, on left side of chin. Duration several years, following electrolytic removal of a mole. Trichloracetic acid was first applied, Jan. 3, 1912, and the patch was promptly brought under clinical control. There have been no signs of recurrence for almost two years and

patient appeared radically and permanently cured on date of last visit, June 2, 1914.

CASE 8.—Mrs. S. H. G., aged 53, lupus vulgaris infection followed slight laceration to right ear ten years ago, from an earring. The nodules slowly extended themselves downward over the lobe of the ear and over the right cheek, to the angle of the jaw and upwardly over the free edge of the ear to its upper third. Caustic and erosive pastes and liquids, curette-



Fig. 7.—Photograph of moulage of Case 4 before treatment.

ment, Roentgen ray, tuberculin, light, etc., were all used without success. Trichloracetic acid was first applied, April 21, 1911, and a clinical result was apparently attained, May 29, 1912. The cheek remained permanently well, but a few nodules again made their appearance over the free edge of the ear, March 7, 1913, but promptly responded to a few additional applications of the remedy.

CASE 9.—Mrs. M. T., aged 56, lupus vulgaris of thirty-three years' duration, which has destroyed almost the entire cartilaginous portion of the right ear, and has extended posteriorly into the scalp, and downward over the right cheek to the angle of the jaw, forward to its middle third, and upward to the outer canthus of the right eye. A few outlying nodules are situated on the right side of the forehead, and near the right angle of the mouth. Curettement, caustic and erosive preparations, Roentgen ray and light have been unsuccessfully applied. Trichloracetic acid was first applied, Jan. 22, 1914, and the patient at present writing is apparently progressing toward prompt and satisfactory recovery.

CASE 10.—J. B., aged 53, painter, circumscribed patch of lupus verrucosus cutis on lower third of left tibia, size of 1 by $\frac{3}{4}$ by $\frac{3}{8}$ inches in the various diameters, of eighteen years' duration. Enlargement has been very slow and insidious. Trichloracetic acid first applied Jan. 16, 1914: discharged well, April 15, 1914. No evidence of relapse, May 13, date of patient's last visit.

CASE 11.—W. G., aged 20, baker, several small, warty, painful excrescences over the dorsal aspect of the left hand, near the knuckle of the index-finger, with a history of about one year's duration. Clinical diagnosis of tuberculosis verrucosa cutis, was, in a measure, confirmed by physical signs of pulmonary apical involvement and bacilli in sputum. Trichlor-

acetic acid was first applied January 15, and followed by applications, January 29, February 12 and 26, and patient was discharged well, July 15, 1913. No relapses at present writing.

CASE 12.—A. J. C., aged 39, with numerous painful fissured excrescences of tuberculosis verrucosa cutis, covering the dorsal aspect of both hands, of approximately eighteen months' duration. Diagnosis clinically confirmed by well-advanced pulmonary tuberculosis and sputum laden with bacilli. Remedy first applied, March 6, 1914, and, April 8, date of patient's last visit, clinical recovery seemed already established.

19 West Seventh Street.

ABSTRACT OF DISCUSSION

DR. WILLIAM T. CORLETT, Cleveland: I have had no experience with this special drug in the treatment of lupus vulgaris, although deep curetting, followed by the application of phenol or the acid nitrate of mercury has given me the best results. I have gradually come to regard lupus vulgaris as one of the most obstinate affections with which we have to deal, and I do not greatly regret when such patients, who expect rapid and brilliant results, go elsewhere—to the surgeon, for instance, where radical treatment by the knife is usually resorted to. With the Roentgen ray I have had some favorable results, but as a routine treatment I have not found it successful.

DR. M. L. RAVITCH, Louisville: I have found lupus vulgaris analogous to psoriasis, "on again; gone again." Whether we use the monochloracetic acid or the trichloracetic acid, this agent is very destructive in its effects. About three years ago Dr. D. W. Montgomery, San Francisco, referred to Dr. Heid-



Fig. 8 (Case 4).—After partial treatment.

ingsfeld's use of this remedy, and reported favorable results from it in the treatment of keratotic conditions. I have had little success with the remedy in this condition. In lupus vulgaris we do not know whether we are dealing with a localized condition or a manifestation of general tuberculosis. I have found phenol (carbolic acid) and iodine very satisfactory in a number of cases of lupus vulgaris, the acid being first applied and then painted over with iodine. Persistently applied, this remedy acts admirably.

DR. HENRY C. BAUM, Syracuse: I have used trichloroacetic acid in a variety of conditions for many years, and while my results in some instances were very satisfactory, they were not equal to those of Dr. Heidingsfeld in cases of lupus vulgaris, which is perhaps due to the fact that I did not continue the treatment as persistently as he did. My experience with the Roentgen ray does not agree with Dr. Corlett's. I have treated many cases of lupus vulgaris with the Roentgen ray with perfectly satisfactory results, both from a cosmetic point of view and as to permanency of the cure. I can recall only one case in which the outcome was not satisfactory, and in that instance I had excellent results from pyrogallol acid, which I find has a selective action in lupus, selecting and destroying the diseased areas very beautifully. We should not lose sight of the fact that lupus is not a superficial disease: with the microscope we find cells deep down in the corium. It is hopeless to try to eradicate the disease by superficial treatment, and it is because the Roentgen ray penetrates deeply that it is so valuable.

DR. WILLIAM S. GOTTHEIL, New York: The man who calls attention to an old remedy is entitled to just as much credit as he who suggests a new one. Under Dr. George H. Fox I have seen lupus vulgaris treated with phenol and various acids, trichloroacetic and nitric, the applications being made with a toothpick inserted deep into the lesions. I was surprised to hear from Dr. Baum that he has had such good results in lupus vulgaris with the Roentgen ray. In New York City the Roentgen ray has been practically discarded by the radiologist as a therapeutic agent.

DR. S. E. SWEITZER, Minneapolis: Has this treatment been of value in lupus of the mucous membranes? In our part of the country, lupus vulgaris appears to be very rare. In a case which I saw recently, the disease involved the outside of the nose and also the nasal mucous membrane.

DR. H. H. HAZEN, Washington, D. C.: To my mind, lupus vulgaris, as I see it in hospital practice, is comparable to rodent ulcer, and I believe the correct method of treatment, in early cases, is to get rid of it surgically. Under local anesthesia the lesion should be thoroughly curetted and then treated with the actual cautery. In some cases I have used the acid nitrate of mercury, after the manner described by Dr. Samuel Sherwell. I have very little faith in the so-called selective action of various applications, inasmuch as they would not destroy isolated foci of infection, and my experience with the Roentgen ray has led me to believe that in over one-half of the cases of lupus vulgaris in which it has been employed, there is a relapse sooner or later, usually within one or two years.

DR. J. B. SHELMIER, Dallas: I have not seen a case of lupus vulgaris in my part of the country for the past eighteen years, or, at least, I have not recognized any as such. Of two cases that were sent to me with that diagnosis, one proved to be syphilis and the other cancer.

DR. JAY F. SCHAMBERG, Philadelphia: In view of the derogatory remarks made by one of the speakers concerning the value of the Roentgen ray, permit me to state that some years ago I saw a very extensive case of lupus vulgaris involving a large part of the face which was cured by the use of the rays; the cosmetic result was excellent, and there has been no recurrence for seven years.

DR. M. B. HARTZELL, Philadelphia: I think the good results obtained by Dr. Heidingsfeld in the cases he has reported are largely due to his persistency. Whether we use trichloroacetic acid or any of the other destructive agents, we must be persistent. My experience with this remedy dates back some fifteen years when I used it on a boy whose mother always had to help us in holding him down while we made the applications, which I recollect were extremely painful.

DR. J. B. KESSLER, Iowa City, Iowa: I have used trichloroacetic acid in keratotic conditions, but have had no experience with it in lupus vulgaris, which is very rare in my section of the country; I have probably not seen more than one or two cases in the past dozen years. I cannot agree with Dr. Heidingsfeld that the application of trichloroacetic acid is comparatively painless. I have resorted to it in various cutaneous

conditions and most of my patients complained considerably about it.

DR. M. L. HEIDINGSFELD, Cincinnati: While trichloroacetic acid is an old-time remedy, I have searched the literature very carefully and have failed to find any except slight reference to its use in lupus vulgaris. It has been most extensively employed in throat and nose work, in 20 or 30 per cent. solutions. In my work I have used it in concentrated form, and



Fig. 9 (Case 8).—After treatment.

while the applications have been attended by some pain and discomfort, these have not been excessive and I have heard very little complaint from either children or adults. It is possible that this is due to the application I make after the treatment, as described in my paper. Pyrogallol, to which Dr. Baum referred, has proved very disagreeable and unsatisfactory in my hands. Surgical treatment, while sometimes imperative, is objectionable to many patients on account of the resulting disfigurement. In response to Dr. Sweitzer's query, my results with mucous-membrane lesions in close proximity to the skin of the lips and nose have been equally gratifying in character.

Mathematics and Digestion.—The researches of Pawlow and his pupils have clearly demonstrated the obedience of the digestive processes to mathematical laws. Thus, it has been ascertained that the time of digestion is, roughly speaking, proportional to the square root of the quantity of food, and that the same is true of the amount of gastric juice secreted in a given time. Professor Svante Arrhenius, in his recent lecture at the Royal Institution on "The Identity of Laws in General and Biological Chemistry," pointed out that, just as in reactions in general chemistry, the velocity of the reaction increased with the temperature, so also is this the case with organic products and vital processes, the action of enzymes being accelerated by increase of temperature up to certain limits. It might be helpful to diners-out if a digestive time-table of the various articles of food were appended to the menus, or, better still, indicated in special type after each dish. Such a "psychological restaurant" might pay well if established within easy distance of Harley Street.—*Mcd. Press*, June, 1914.

GENERALIZED NEUROFIBROMATOSIS
(Von RECKLINGHAUSEN'S DISEASE)REPORT OF A CASE SHOWING A SUPERFICIAL
RESEMBLANCE TO HODGKIN'S DISEASE

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Generalized neurofibromatosis, von Recklinghausen's disease, is by no means a rare condition, occurring in the proportion of about 1:1,300 dermatologic cases¹ (85 in 112,775). Were one to take into account the *formes frustes* of Thibierge²—cases exhibiting only generalized pigment spots, and a functional, psychic or trophic disturbance, but no cutaneous or nerve-tumors—the percentage would then be considerably higher.

As the etiology and pathogenesis of the condition are by no means *res adjudicatae*, each case not fully conforming to the recognized types merits recording, both for statistical purposes and with a view of throwing new light on some of the obscure features.

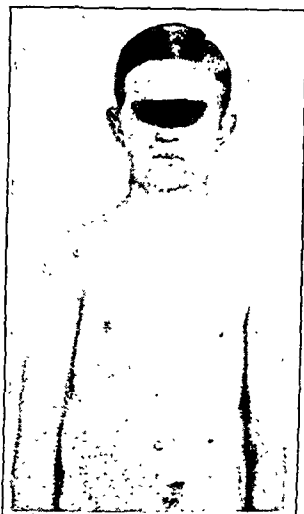


Fig. 1. — Photograph showing lymphatic appearance, cervical swelling, diffuse pigment spots and nevi. Note the absence of elevated skin tumors.



Fig. 2. — Photograph showing particularly pigment spots and fullness of cervical region.

From time to time, extensive monographs on the subject have appeared. The first, that of von Recklinghausen³ (1882), collects the authentic cases recorded up to that year and establishes the condition on a firm clinical and pathologic basis; from his work, the morbid process has derived its name. Alexis Thomson,⁴ in a monograph appearing in 1900, gave the subject exhaustive treatment. Adrian⁵ (1903), on the basis of 447 cases which he was able to gather from the literature, published a comprehensive review of all features of the process, essential and occasional. So complete is his *Sammel-Referate*, that a survey of the literature of the last decade—comprising several hundred cases, the majority from French sources—

enables one to add little that is vital to the knowledge of the subject.⁶

The particular interest attaching to the case we wish to record is its superficial resemblance to morbus hodgekinii. At the conclusion of our report, on the basis of our observations and of manifestations recorded in the literature, we desire to emphasize certain items relative to the etiology and pathologic place of the entity.

History.—Master John D., aged 16, a schoolboy, entered Wesley Hospital, April 28, 1914. As was facetiously remarked at the time, he arrived with a written diagnosis in one hand and a vial of vaccine in the other. It would seem that a short time previous to admission he had been under observation at the experimental station of a well-known pharmaceutical house, where he was placed on vaccine treatment for Hodgkin's disease. The diagnosis was made after removal of a subcutaneous node from the right deltoid region; from this tumor, we presume, was cultivated the organism used in the making of the vaccine. As no improvement followed the injections, the boy was referred by Dr. Hayman for observation.

Up to the onset of his present illness, the boy had always been well, except for an attack of measles, two years before. This had affected his eyes and had necessitated his remaining out of school a year.

The family history is irrelevant; there has been no similar illness among his relatives, according to the statement of the boy's mother. There is no history of tuberculosis.⁷

The present complaint began five to six years ago when there were first noticed some "lumps" in both cervical regions, though attaining a greater size in the left. These tumors were sensitive to pressure and gradually grew larger, the mass on the left side reaching half the size of his fist. After the lapse of six months, the tumors became smaller and less sensitive. (Particular questioning elicited the fact that when a baby he had "rheumatism," at which time his feet were very tender and he could not walk.)

Soon after the appearance of the cervical masses, the boy noticed tender areas in both arms, which were sensitive following slight bruises; even moving the arms in certain directions caused pain. Somewhat later, small tumors could be felt under the skin of the arms. Subsequently similar tender lumps appeared on the trunk, scalp and lower extremities.

In March of this year the patient discovered innumerable small nodules when passing his hand over the integument, particularly of the arms. In the past year, occipital headache, of frequent occurrence, associated with dizziness has been present.

Present Status (April 4, 1914).—The boy is a well-nourished, healthy appearing lad of 16, weighing 102 pounds (Figs. 1 and 2). Physically and mentally he seems to represent his years. Aside from nostalgia and worry over the failure of therapy in his case, he feels very well. His appetite is good, he sleeps well, and his bowels are regular. He cannot play, however, as do his friends, because of pain in the groins and popliteal spaces when he romps about. Sudden or extreme movements of the arms also cause pain.

He presents to a certain degree that typical, but difficult to describe, lymphatic facial appearance—a slight puffiness of the lids and skin of the face—which the Germans so happily express as *pastös*. The teeth are in good condition except for the right lower molar (roentgenogram by Dr. Hollis E. Potter shows no periapical abscess). The gums are spongy and bleed easily; on pressure, pus exudes from the incisors of the lower jaw. The soft palate shows an irregular lymphatic thickening; the tonsils are medium-sized and not distinctly abnormal.

The right ear has been numb, following the recent (January, 1914) removal (elsewhere) of three small tumors from the right side of the neck. The paresthesia extends also to

1. Heidingsfeld: Am. Jour. Dermat., July, 1900.

2. Thibierge: Société médicale des hôpitaux de Paris, Feb. 18, 1898; quoted by Lion and Gasne: Bull. et mém. Soc. méd. d. hôp. de Paris, 1904, xxi, 5.

3. Von Recklinghausen: Ueber die multiplen Fibrome der Haut, etc., Berlin, 1882, (literature).

4. Thomson, Alexis: Neurofibroma and Neurofibromatosis, Edinburgh, 1900.

5. Adrian: Centralbl. f. d. Grenzgeb. d. Med. u. Chir., 1903, vi, (literature).

6. Kerr: Surg., Gynec. and Obst., January, 1914 (extensive bibliography compiled by Dr. von Klein of the Crerar Library).

7. Wittemann: Med. Klin., 1911, vii, 882.

the right side of the face, neck and shoulders. For a time, the patient could not rest on his side because it felt "board-like." Another tumor, removed at the same time, from the left cubital region—which was freely movable from side to side, but not from above downward—caused no sensory disturbances. In March of this year, a "lump" was taken from the right shoulder region; from this the diagnosis of Hodgkin's disease was made and the vaccine prepared (!) following which there remained a numbness over the anterior aspect of the right arm.

The most striking feature, from the first glance at the boy, is not the existence of the numerous tumors, but the presence of innumerable diffuse pigment spots of various kinds. The majority of these are freckle-like and distributed chiefly over the trunk; in addition there are seen nevi—in particular, one large one on the anterior abdominal wall—pea-sized bluish areas surmounting small nodules in the skin, and a patch of atypical hair, reddish in hue, the size of the palm of the hand on the left forearm.

The cutaneous and subcutaneous nodes are distributed over the entire body, and vary in size from that of a pinhead to that of a walnut. The largest are in the left cervical region. In the lower cervical region they are massed together like bunches of grapes composed apparently of many hundred tumors on either side. Many of the nodules are associated with a thick firm strand, in most cases coursing centralward from the tumor, in a few peripherally.

An attempt to count the tumors, as a number of writers have painstakingly done, was not made; but it can safely be asserted that they run into the hundreds. No portion of the integument is free from them; a delicate palpation often would reveal a millet-sized node where none was suspected. The large number in the cervical, antecubital, anterior crural and popliteal regions explains the complaint of the boy that moving the arms and legs is painful.

A notable feature of this case is the absence of large skin tumors. The great majority of illustrations accompanying the presentation of these cases show numerous large, sessile, wart-like growths of the skin; in this patient, however, a cursory glance would scarcely reveal an elevated node. Many of the cutaneous lumps are covered with a bluish and bluish-red skin. None gives spontaneous pain, but nearly all are tender to pressure.

As to the remainder of the examination, a few words will suffice. Nodes can be palpated at all the various points where superficial lymph-nodes are ordinarily to be felt. We have assumed (though without the actual removal and examination of any of these nodes) that we have to do with a *generalized* lymphadenitis, and this assumption has further justification in the percussion enlargement of the spleen—from the sixth rib to two fingers below the costal arch—though a definite edge cannot be felt. The significance of these findings will be commented on later.

The organs of the thoracic cavity show several variations from the normal; dullness over the upper sternum and overlapping the margins, particularly to the left (Figs. 3 and 4); and an apex beat and left cardiac border 1 cm. outside the mammillary line with some accentuation of the pulmonic second tone. There are no murmurs. The liver edge is to be felt two fingers' breadth below the costal arch, on deep inspiration, with a smooth surface and sharp edge; on percussion it is not enlarged to the left.

The secondary sexual characteristics are just appearing. Neither testicle is in the scrotum, but they can be pushed down, with little difficulty; the testicles and penis are perhaps small for the age. The reflexes are all present and normal. There is no ankle edema. Examination of the blood (Witte mann⁷) shows: erythrocytes, 5,240,000, hemoglobin, 85, leukocytes, 9,400, distributed as follows: polymuclear neutrophils, 65.5 per cent., lymphocytes, 27.0 per cent., large mononuclears and transitionals 5.0 per cent., eosinophils, 2.0 per cent. and basophils, 0.5 per cent. Practically 90 per cent. of the neutrophils would fall into Classes II and III of Arneth's classification (Dr. Holmes). The Wassermann reaction (blood) is negative (Holmes). The systolic blood pressure is 90 mm.

May 2, a cutaneous tumor (chest wall), a deep tumor (left forearm) the tonsils and the carious molar tooth were removed by Dr. Kanavel. The tonsils were the seat of a chronic inflammation with ulceration (Dr. Zeit). The removal of the node from the forearm furnished a surprise. Before the incision, it was felt as a walnut-sized round tumor, but at operation there was found an egg-sized mass in a fine capsule, composed of several lobes and looking much like a combined fatty and myxomatous tumor of a jelly-like consistency. A careful dissection as to anatomic relations was not made, so that the association of the mass to adjacent nerves was not noted; immediately following the operation, however, partial wrist drop occurred with inability fully to extend the little finger.

Somewhat later there was removed from the left scapular region a tumor made up of convolutions of interwoven strands studded here and there with nodules (plexiform neuroroma; *Ranckenneurom*).

Microscopically (hematoxylin and cosin [Fig. 5]), the excised tumors showed the picture characteristic of von Recklinghausen's disease—a spongy, myxoma-like tissue with many meshes and without definite structure. Some of the spaces are lined with endothelial cells, but the bulk are formed by protoplasm-poor cells, all of about one size. With this stain the plasma-cells emphasized by Unna⁸ are not seen. The Marchi method (Fig. 6) shows bundles of apparently normal axons in the tumor mass (Dr. Ranson).



Fig. 3.—Chest, anteroposterior, showing mediastinal mass capping the heart.

That we have to do with a case of neurofibromatosis is clear from the clinical manifestations, surgical sequelae and microscopic examination. The symptoms of the first order (Adrian) are all present, that is, tumors of the skin, tumors of the nerves and cutaneous pigment anomalies. Of the symptoms of the second order, so called—functional disturbances, intellectual and psychic changes, maldevelopment of various kinds, bone changes and the like—there is but little to be seen; and, indeed, in the majority of reported cases they are usually absent or only suggested. The headache and dizziness belong to the group of functional disturbances so far as we have been able to determine, for there is no evidence of an intracranial neurofibroma.

Of intellectual and psychic anomalies there is no sign. The boy seems normal except for the lymphatic appearance already commented on.

In the category of developmental faults belongs the condition of cryptorchism. Bone changes not infrequently observed, scoliosis particularly, are absent; and there are no trophic disturbances.

8. Unna: Fibrome, Histopathologie.

Our patient exhibits, in brief, few findings which have not frequently been commented on by other observers. One unusual feature is the non-critical resemblance to Hodgkin's disease—the appearance of the first nodes in the cervical region, their initial enlargement, the generalized lymphadenopathy, the enlarged spleen, etc. For these we shall offer below a different interpretation. As for the organism cultivated from one of the nodes, we can offer no explanation save that it may bear some relation to bacterial



Fig. 4.—Chest, postero-anterior, showing same as Figure 3.

flora not uncommonly present in new growths. Cultures in our laboratory were sterile (Holmes).

The absence of large cutaneous tumors growing considerably about the skin level may be accounted for by the age of the process; they may be looked for later, or perhaps this is one of the forms which tends to involve the deeper nerve filaments rather than the cutaneous.

There is no congenital, hereditary or familial aspect to this case—a feature so striking in many observations. The patient falls into that rather large class which shows no evidence at birth of the coming condition and begins to develop it at puberty.

As to nomenclature, many observers, notably von Recklinghausen,³ Adrian⁵ and Orth,⁹ have taken exception to the name neurofibromatosis as representing incorrectly the nature of the growth. That the growths are not essentially of nervous origin is well known; that they arise from the neurilemma sheaths or from the fibrous investment of certain cutaneous appendages or subcutis or perhaps from both structures, is generally accepted.¹⁰ Their origin from an embryonic nervous tissue has been advocated in late years.¹¹ Hence the name neurofibromatosis is not apt in that it attributes to nervous tissue proper a false participation in the process. False neuroma is no improvement. Adrian's suggestion of the term "von Recklinghausen's disease" seems to him the best and least open to adverse criticism. French observers generally employ this term.

There remains now the consideration of the many theories put forth from time as to the actual nature of von Recklinghausen's disease. Adrian reviews the ideas held up to the year 1903. All observers who have expressed an opinion on the point are agreed that

it is a disease which comes into being through some general impetus; it is a system disease affecting a particular tissue (Verocay¹²). The infectious, the toxic, the traumatic and the sympathetic influence theories are to-day no longer generally put forth, though Pic and Gauthier¹³ in 1907 point out the close association of the condition with tuberculosis. We shall refer later to the view of Chauffard and others that the adrenals are affected.

The view most generally advocated and the one best founded is that the condition arises on an inborn tendency—an anlage—which exerts its influence at variable times after birth and leads to the proliferation of the fibrous tissue making up the neurilemma sheaths.

It is our opinion, however, based on certain peculiarities of the case we have reported, on features of cases we have collected from the literature, and on general considerations, that von Recklinghausen's disease belongs to the larger congenital anomaly known as the status thymicolymphaticus sive hypoplasticus. Space forbids our entering in any detail, into the complexities of this condition, to which so much attention has been devoted of recent years.¹⁴ Speaking for the condition in our case are the peculiar lymphatic facies, the hypertrophic faucial lymphatic ring, the generalized lymphadenopathy, the enlarged spleen, the persistent and enlarged thymus, the scanty axillary and pubic hair, the cryptorchism, the small testicles and penis, and the very tendency toward tumor formation—particularly multiple. All of these go to make up the thymicolymphatic and hypoplastic status, or condition of structural inferiority (*Minderwärtigkeit*).

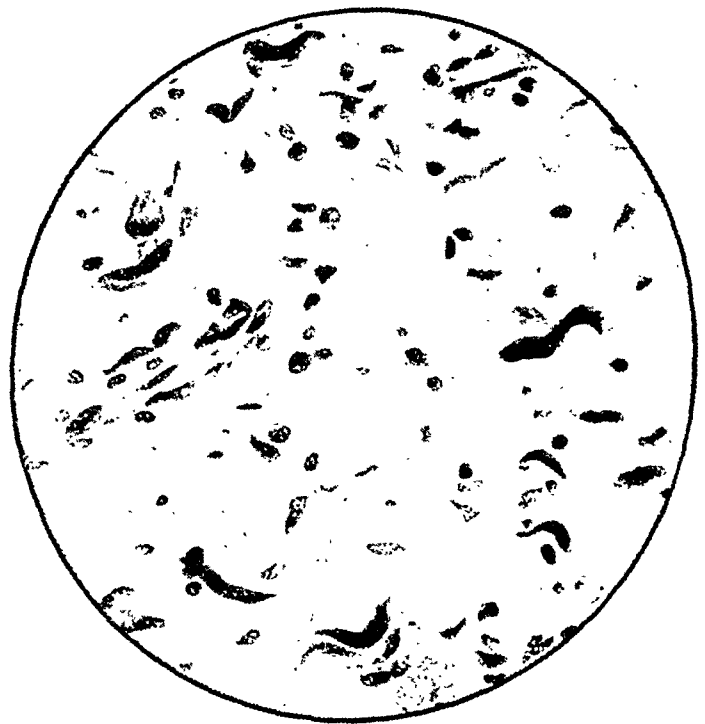


Fig. 5.—Microscopic section of tumor removed from the left forearm, hematoxylin-eosin stain, X 450, showing loosely interwoven texture, marked edema of stroma and cells made up almost entirely of nuclei.

Other observers have not noted this association of the lymphatic status with von Recklinghausen's disease. We have been able, however, to collect from this case or that, one or more recognized attributes of the

9. Orth: Deutsch. med. Wchnschr., 1911, p. 473.
10. Jarisch: Hautkrankheiten, Wien und Leipzig, 1908, p. 810 (literature of this phase).
11. Kohn: Arch. f. mikr. Anat., 1907, lxx (quoted by Verocay, Footnote 12).

12. Verocay: Beitr. z. path. Anat. u. z. allg. Path., 1910, xlviii, 1.
13. Pic and Gauthier: Lyon méd., 1908, cxl, 1148.
14. Bartel: Status Thymico-Lymphaticus und Status Hypoplasticus, Wien, 1911. Von Neusser: Ausgewählte Kapitel d. klin. Symptomatologie und Diagnostik H. 4, Zur Diagnose der Status Thymico-Lymphaticus, Wien, 1911. Wiesel, Status Thymico-Lymphaticus, in Lewandowsky: Handbuch d. Neurologie, Berlin, 1913, p. 380 (literature).

anomaly. Sabrazés¹⁵ notes the generalized lymphadenopathy. Klinger¹⁶ the absence of pubic hair. Wittemann⁷ in his cases observed a mononucleosis regularly. In Ehrmann's¹⁷ case the hands of the patient reached almost to his knees—a disproportion frequently observed in the status lymphaticus. Various malformations are generally looked on as one of the symptoms of the second order belonging to von Recklinghausen's disease. For a compilation of these, we would refer the reader to Adrian's monograph.¹⁸

Very striking in a number of case histories has been the early and unexplained lethal ending after operation on large tumors which offered no technical difficulty. Among such records are cases reported by Piollet,¹⁹ Lambret and Gérard,²⁰ and Littlewood, Telling and Scott.²¹ Though these are not strictly instances of thymic death, they are to be ascribed in all probability to a lack of resistance.

It would appear to us, therefore, that closer examination, in the future, directed particularly to evidence of the presence of stigmata of the status thymicolymphaticus, would furnish convincing proof of the association of the two conditions.

Another phase of von Recklinghausen's disease which has been cursorily treated in the last decade, particularly by French writers, is the influence of the glands of internal secretion in the process. Again we refer to Adrian for assembled instances, up to the year 1903, of involvement of the ductless glands and for symptoms referable thereto. Chauffard and Ramond²² in 1896 advocated the adrenal theory of the origin of the disease, basing their opinion on the observed pigmentation, the commonly observed asthenia, gastro-intestinal disturbances and other evidences of adrenal insufficiency. In two of their cases coming to necropsy adrenal changes were discovered, in one an adenoma, in the other atrophy. The adrenal theory, though never of general acceptance, has received a great deal of consideration by many observers.

The majority felt that the association was merely a coincidence. (We would call attention, however, to a recognized pathologic fact, namely, that Addison's disease is almost constantly accompanied by stigmata of the status lymphaticus.) Adrian⁵ rejects the adrenal theory, citing the various findings bearing on the relationship. Merk²³ in his case disregards Chauffard's view. The chromaffin system was found hyperplastic in Orzechowski's²⁴ patient. Gabriel²⁵ and others have observed good results from the use of adrenal extract. Vignolo-Lutati²⁶ observed a well-developed Addison complex in his case. Revilliod²⁷ and Pic and Rebattu²⁸ comment on the frequent

association of the two conditions, as do Bourcy and Laignel-Lavastine.²⁹ Mucous membrane pigmentation was noted by Oddo.³⁰

Thyroid disturbances are also of frequent occurrence. Adrian has gathered several instances of the association of von Recklinghausen's disease and cretinism.³¹ Pic and Rebattu²⁸ found thyroid changes. In one of his cases Ehrmann found a small thyroid, in the other an absence of the gland. It is interesting to note that joint changes are not infrequently present in disturbances of the ductless glands. Preble and Hektoen³² report a case of von Recklinghausen's disease associated with arthritis deformans. And, furthermore in the latter condition, thyroid extract has been used with favorable results (Midelton,³³ Llewellyn³⁴). It is scarcely necessary to recall here the close relationship of thyroid, sexual glands and thymus.³⁵

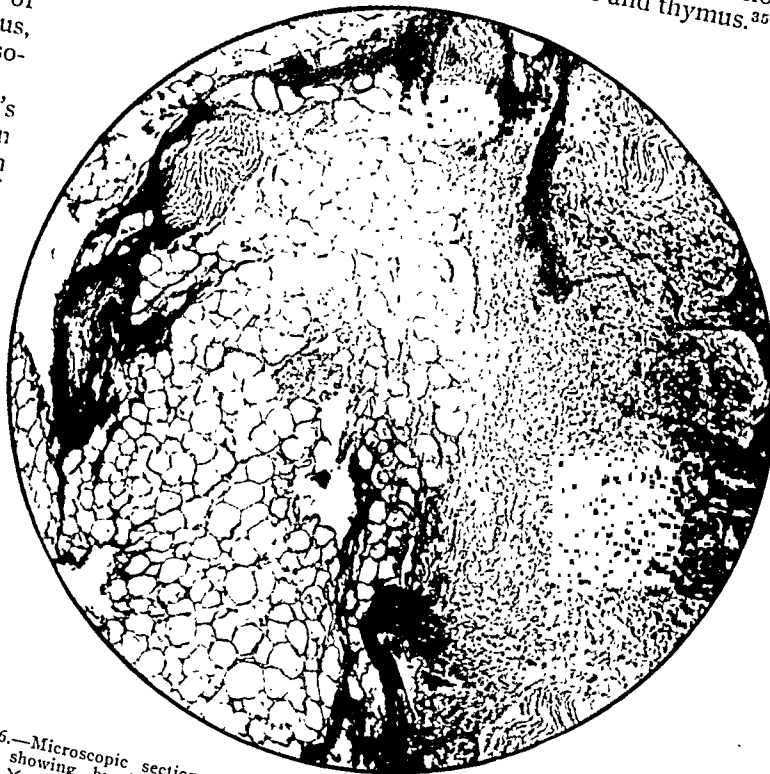


Fig. 6.—Microscopic section of plexiform neuroma (see text) stained by Marchi method, showing bundles of nerve fibers loosely separated by edematous tumor stroma; $\times 60$.

Of the behavior of the thymus we have found no record. Functional sexual disturbances—impotence, frigidity, diminished libido—are noted by Adrian. Orzechowski²⁴ found ovaries below par. Meige and Feindell³⁶ note ovarian disturbances. Osteomalacia is very frequently observed, as for example by Gabriel,²⁵ Klinger,³⁷ Wechselmann³⁸ Marie and Couvelaire³⁹ and Hoisnard.³⁹ Menstrual anomalies are of frequent record (Adrian).

15. Sabrazés: *Gaz. hebdom. d. sc. méd. de Bordeaux*, 1911, xxxii, 591.
16. Klinger: *Berl. klin. Wehnschr.*, 1912, xlix, 1491.
17. Ehrmann: *Wien. klin. Wehnschr.*, 1904, xvii, 139.
18. Adrian: *Centralbl. f. d. Grenzgeb. d. Med. u. Chir.*, 1903, vi, 465.
19. Piollet: *Gaz. d. hôp.*, Dec. 4, 1902, p. 1345.
20. Lambret and Gérard: *Echo méd. du nord*, 1908, xii, 30.
21. Littlewood, Telling and Scott: *Lancet*, London, 1905, i, 921.
22. Chauffard and Ramond: *Bull. et mém. Soc. méd. d. hôp. de Paris*, 1896.
23. Merk: *Arch. f. Dermat. u. Syph.*, 1905, lxxiii, 139.
24. Orzechowski: *Ztschr. f. d. ges. Neurol. u. Psychiat.*, 1912, xi, 231.
25. Gabriel: *Berl. klin. Wehnschr.*, 1911, xlviii, 133.
26. Vignolo-Lutati: *Monatschr. f. prakt. Dermat.*, 1911, lii, 51.
27. Revilliod: *Thèse de Genève*, 1900, quoted by Vignolo-Lutati, Footnote 26.

28. Pic and Rebattu: *Lyon méd.*, 1907, i, 636.
29. Bourcy and Laignel-Lavastine: *Bull. et mém. Soc. méd. d. hôp. de Paris*, 1903.
30. Oddo: *Revue neurol.*, 1905, xiii, 412.
31. Strohmeyer (1844) and Schuh (1851, 1854), quoted by Adrian (Footnote 5), p. 461.
32. Preble and Hektoen: *Am. Jour. Med. Sc.*, 1901, cxxi, 1.
33. Midelton: *Practitioner*, lxxxviii, 11, 80.
34. Llewellyn: *Edinburgh Med. Jour.*, 1904.
35. Lampé: *Deutsch. med. Wehnschr.*, 1904.
36. Meige and Feindell: *Revue neurol.*, 1912, p. 1127.
37. Klinger: *Berl. klin. Wehnschr.*, 1912, xlviii, 1400.
38. Wechselmann: *Dermat. Stud.*, 1910, xx, 133.
39. Cited by Adrian (Footnote 5).

Schlesinger,⁴⁰ in his case found an associated tetany. This is the only recorded instance of parathyroid involvement. We have found no reference to pancreas changes except for a normal organ in Orzechowski's²⁴ case.

Numerous observers record the simultaneous involvement of the hypophysis. Prognathism without further comment is a common observance. Acromegaly and von Recklinghausen's disease are chronicled by De Castro,⁴¹ Wolfsohn and Marcus,⁴² Cushing,⁴³ Nicholas and Favre⁴⁴ and others. Thomas⁴⁵ observed fingers and lower jaw suggestive of acromegaly; Feindel and Frounard,⁴⁶ an acromegalic skull contour. A tumor of the sella turcica was present in Spillman's⁴⁰ case; in Mossé and Cavalie's⁴⁶ an enlarged and hard hypophysis was found. Piollet¹⁹ records pituitary insufficiency and also acromegalic facies and extremities.

That von Recklinghausen's disease may be a manifestation of pluriglandular disturbances has been noted by several writers, notably Pic and Rebattu,²⁸ Orzechowski²⁴ and De Castro.⁴¹ Their deductions have been based, however, on symptoms shown by their own cases; no observer, to our knowledge has heretofore collected extensive data from the literature showing the not uncommon occurrence of ductless gland disturbances in generalized neurofibromatosis.

Direct proof that von Recklinghausen's disease is part of the larger congenital anomaly known as the status thymicolymphaticus, or that the secretions of the ductless glands play a part in its production, cannot of course be adduced. The close interweaving of the lymphatic status and ductless gland affairs is well known; and considerable evidence is at hand to indicate that von Recklinghausen's disease is a manifestation of both. This is particularly understandable if one admits the embryonic nature of the tissue forming the tumors.

NOTE: Dercum's disease, *adipositas dolorosa*, has received considerable attention of late as an internal secretion disorder. In its tendency toward multiple tumor formation it resembles von Recklinghausen's disease. It is of interest to note that in the latter, lipomas are of frequent occurrence.⁴⁷

30 North Michigan Avenue—122 South Michigan Avenue.

40. Schlesinger: Mitt. d. Gesellsch. f. inn. Med. u. Kinderh., in Wien, 1911, x, 124.

41. De Castro: N. iconog. de la Salpêtrière, 1912, xxv, 41.

42. Wolfsohn and Marcus: Berl. klin. Wchnschr., 1912, xlix, 1088.

43. Cushing: The Pituitary Body and its Disorders, Philadelphia, 1912, p. 148.

44. Nicholas and Favre: Lyon méd., 1910, cxiv, 786.

45. Thomas: Bull. Johns Hopkins Hosp., 1903, xiv, 204; also Maryland Med. Jour., 1903, xlv, 82.

46. Cited by Wolfsohn and Marcus (Footnote 42).

47. Cushing (Footnote 43): Von Stejskal, Mitt. d. Gesellsch. f. inn. Med. u. Kinderh., 1907, vi, 153.

Vis Medicatrix Naturae.—One of the most interesting facts in regard to the regenerative capacity—Nature's power of healing—is its adaptive distribution. It tends to occur in those animals and in those parts of animals which, in the natural conditions of their life, are particularly liable to non-fatal injury. Long-legged and lanky animals like crabs and star-fishes usually show much of it; a self-contained globular animal like a sea-urchin shows little. The chameleon is one of the few lizards which cannot regrow its tail, for it keeps it safely coiled around the branch. Another very interesting fact is that what is regrown is not always quite true to pattern—the crab does not always get an eye for an eye, but it may be an antenna for an eye. The lizard does not always regrow its own tail, but its grandfather's, so to speak.—J. Arthur Thomson, *Brit. Med. Jour.*

SPONTANEOUS SUBARACHNOID HEMORRHAGE

A CONTRIBUTION TO THE SUBJECT OF MENINGEAL HEMORRHAGE*

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PHILADELPHIA

Aside from the rare pachymeningitis hemorrhagica interna, and the traumatic pial hemorrhage, there has been no recognition of a spontaneous subarachnoid hemorrhage. Although this symptom-complex has been elaborately studied by Froin,¹ Chauffard,² Vigneras³ and others among the French writers, little or nothing is mentioned of the subject by the American, English or German writers, Starr, Dana, Mills, Oppenheim, Finkelburg in Lewandowsky's⁴ handbook, Schultze in Nothnagel's "System," and others.

In describing meningeal hemorrhage, Gowers does not differentiate the subarachnoid from the other forms, but his description corresponds very closely to this type. He says:

Blood may be extravasated, (1) outside the dura, separating it from the bone; (2) beneath the dura; (3) beneath the arachnoid between it and the pia (subarachnoid hemorrhage). . . . Meningeal hemorrhage occurs apart from visible aneurysm under the same conditions as hemorrhage elsewhere in the brain. . . . In some cases in young adults, the occurrence of meningeal hemorrhage is probably indicated by intense pain in the head at one spot, soon followed by coma and convulsions. The cases are remarkable as occurring without other exciting cause than exertion in a hot room; or sometimes after a meal.

Froin, in 1903, collected some reports of cases of subarachnoid hemorrhage but he included the traumatic form among them. Ehrenberg⁵ was the first to separate the spontaneous subarachnoid hemorrhage from the rest. He reports two of his own, and analyzes twenty-seven other cases. He distinguishes two varieties, the one in which the meningitic picture predominates; the other an apoplectic onset, with coma or cerebral type. Since then Babinski⁶ and Jumentie report two cases, and Forsheim⁷ one.

Two of my cases illustrate the apoplectic form, and one the meningitic.

CASE 1.—B. Y., white, aged 59, married, was admitted to the hospital April 25, 1910. Present illness began suddenly with vomiting, headache, pain in the epigastrium and stupor. (I had no opportunity of studying this case clinically and the notes taken are very meager.) The pupils were equal. reacted to light and accommodation. There were no paralyses. The patient died the next day. No clinical diagnosis was made.

At necropsy, examination of the brain showed a hemorrhage beneath the arachnoid at the base. It extended forward to the frontal lobes, and surrounded the optic chiasm. It covered the under surface of both the pons and the medulla. It covered the inferior surfaces of both hemispheres of the cerebellum. The convexity of the brain was free from hemorrhage. There was no evidence of meningitis or throm-

* Read before the Section on Nervous and Mental Diseases at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Froin: Thèse de Paris, 1904. Froin and Boidin: Gaz. d. hôp. 1904, p. 9.

2. Chauffard and Boidin: Presse Méd., 1903.

3. Vigneras: Thèse de Paris, 1908.

4. Lewandowsky: Handbuch de Neurologie.

5. Ehrenberg: Hygieia, 1912, p. 849.

6. Babinski: Soc. méd. d. hôp. d. Paris, 1912.

7. Forsheim: Deutsch. Ztschr. f. Nervenhe., 1913, xlix.

bosis. The skull showed no sign of fracture. Sections were taken from the pons and medulla for microscopic examination. Hemalum-fuchsin and Weigert stains were used. Sections of the cerebellum and the pons stained with hemalum-fuchsin showed a considerable collection of red blood-cells beneath the pia-arachnoid. The pia showed a considerable round-cell infiltration of the lymphocytic type. The blood-vessels showed periarteritis and endarteritis. The infiltration of cells around the vessels was intense in places. In two of the vessels in the pons the lumen was almost occluded. In the medulla, similar pathologic changes were noted. Sections of the pons and medulla stained with the Weigert showed a slight border-zone degeneration.

The pathologic picture was that of a syphilitic meningitis. Clinically, this case is interesting despite the meager notes, in that the onset is characteristic of this form of hemorrhage, and shows the apoplectic type of seizure. The meningitic origin of the hemorrhage was only discovered on microscopic examination. As far as I can learn, no microscopic study of this condition has ever been reported.

The second case also illustrates the apoplectic form with coma.

CASE 2.—H. M., an unmarried colored laundress, aged 19, with negative family history and previous medical history, two months ago had pelvic trouble, said to have been inflammation of the tubes. Patient had been well until the morning of her admission to the hospital, when she came home, complaining of severe headache, with vomiting. She went to her room, where she was found unconscious several hours later. She was admitted to the hospital that evening, Dec. 13, 1913, where she died several hours later.

Physical examination showed a young, well-developed girl. The pupils were unequal. There was rigidity of the neck, and spasticity of the lower limbs. Both patellar tendon-reflexes were increased. Babinski was present on both sides. The upper limbs were flaccid. The respirations were of the Cheyne-Stokes' type. Temperature, 100.4 F. The urine analysis showed no albumin, sugar or acetone. Microscopic examination, negative. The diagnosis of subarachnoid hemorrhage was made, and lumbar puncture advised. The possibility of a meningitis was also considered. Hysteria was easily excluded. Uremia and diabetic coma were excluded by the urinary findings. There was no history or visible sign of trauma. Lumbar puncture was made, and the fluid came out drop by drop, somewhat rapidly, until twenty c.c. were collected in two tubes, and both showed a diffuse red color, considerably lighter than pure blood. On standing, no clot was to be noted in either tube, only a slight granular sediment. Centrifuging the fluid showed the supernatant fluid of a yellow color. The Wassermann reaction was negative. No relief followed the withdrawal of the fluid. One hour later the patient died. No necropsy was permitted.

Summary.—A young woman, previously healthy, suddenly was seized with headache, vomiting and unconsciousness. The symptoms present were rigidity of the neck, and spastic paralysis of the lower limbs with Babinski. Clinical diagnosis, spontaneous subarachnoid hemorrhage.

CASE 3.—Italian stone-worker, aged 23, family history and previous medical history negative, one month ago complained of fever, brckache, headache and general weakness. He was treated in an Italian hospital for two weeks, and was apparently cured, though still weak. Five days after his discharge he suddenly developed severe headache, pain in the back of the neck and persistent vomiting, and was admitted to the hospital, complaining of his head and pain in the back of the neck.

Examination showed a young man of fair nutrition, somewhat apathetic. When questioned, patient pointed to his head. Pupils were equal, reacted to light and accommodation. There was rigidity of the neck. The limbs showed no paralysis. Kernig's sign was present. The knee-jerks were absent. There was no Babinski or ankle-clonus. The eye report showed deviation of the eyes to the right, though at times they moved to the median line. The media were clear, the disk margins slightly hazy, but the vessels were neither

engorged nor tortuous. Ear examination was negative. Temperature 100 to 101.4. The lungs showed slight impairment. The diagnosis was subarachnoid hemorrhage with tuberculous diagnosis was subarachnoid hemorrhage with tuberculous meningitis. Lumbar puncture was ordered.

At necropsy, the viscera showed a general miliary tuberculosis. The brain showed miliary tubercles scattered over the convexity and at the base along the vessels. Besides a subarachnoid hemorrhage at the base extended from the optic chiasm over the peduncles, slightly involving the temporal lobes on each side, and also over the pons and cerebellum. The hemorrhage was most marked in the right cerebellopontile angle. There was some hemorrhage over the vermis. The convexity of the cerebral hemispheres was free from hemorrhage.

Summary.—Young man. History of general weakness for a month. Five days before admission to the hospital was seized with headache, vomiting and meningitic symptoms. Examination showed rigidity of the neck, Kernig's sign, loss of knee-jerks, no Babinski, no paralysis of the limbs. Clinical diagnosis; tuberculous meningitis, with subarachnoid hemorrhage. Pathologic Summary: General miliary tuberculosis of lungs, liver, kidney and brain, subarachnoid hemorrhage.

There is some doubt whether this case should be classified among the pure forms of subarachnoid hemorrhage. The picture here is rather that of a second-



Area of hemorrhage in Case 1.

dary complication in the course of a miliary tuberculosis.

The sudden onset in these cases with meningeal symptoms, with or without coma, the disproportion between the onset, severity of the symptoms, and the range of temperature, the presence of hemorrhage in the cerebrospinal fluid, will usually differentiate this condition from other cerebral states. It may not always be possible to prove a primary meningitis as the underlying factor. The etiology has been variously ascribed to sunstroke, as in Bouquet's⁸ case, in which the patient, following prolonged exposure to the sun, suddenly developed rigidity of the neck, headache and Kernig's sign. Lumbar puncture showed hemorrhage. Relief of symptoms followed immediately. Disturbed or aberrant menstrual function was the cause, according to Follet and Chevrel⁹ and Gaillard and Boyé,¹⁰ in their cases.

Follet and Chevrel's patient, a domestic, aged 21, was suddenly seized during the menstrual period with

8. Bouquet: *Ref. Rev. Neurol.*, 1909.

9. Follet and Chevrel: *Gaz. d. hóp.*, 1910, p. 547.

10. Gaillard and Boyé: *Bull. Soc. méd. d. hóp d. Paris*, 1909, p. 1268.

arrangement. Degenerative changes in these cells were numerous so that there resulted considerable necrosis in areas of the tumor tissue. In one of the microscopic fields a very important change was observed at a certain point. Here was found a very definite proliferation or overgrowth of the epithelial cells lining the bronchiole and the characteristic change in the morphology of the proliferating cells from the cuboid to the squamous variety. Here seems to have occurred the metaplasia in the epithelium of the mucous membrane from the normal to cancer. This field is shown in the photomicrograph reproduced here. Cancer cells were also found in the lymph-channels of the affected areas and in the lymph-nodes at the hilum. The mass in the axilla was made up of the same type of cell. No microscopic malignant changes were found in the other tissues examined.

SYMPTOMS AND SIGNS

Evidently these must vary with the size, situation, rate of growth, manner of extension and other characteristics of the neoplasm. Rarely cases have



Photomicrograph showing (1) normal cuboid epithelium lining the bronchial wall; (2) its proliferation and transformation into the cancerous type of cell, and (3) the typical squamous carcinoma cells present in the bronchial lumen.

occurred in which there were no symptoms pointing to malignant disease of the lung. A characteristic symptomatology can not, therefore, be said always to occur. However, certain definite symptoms do seem to be fairly constant in very many of the cases. These are (1) shortness of breath, (2) cough, (3) pain, (4) weakness and loss of weight, and (5) pressure symptoms.

1. *Dyspnea*.—This most distressing symptom seems to be quite frequent. The shortness of breath usually progresses, and as it becomes more severe the patient's physical condition becomes correspondingly more desperate.

2. *Cough*.—This troublesome symptom also seems to occur very often. It has been described as a "dry" cough and as a "moist" cough. It is nearly always continuous, so that it has been termed "tussis perpetua." With it there is almost always an abundant

mucopurulent, bloody expectoration. The degree of hemoptysis may vary, the sputum at times showing only a few red streaks, at others a liberal amount of bright-red blood.

3. *Pain*.—Pain on the affected side or even radiating to the other side and to distant parts occurs frequently. It is said to be not so severe as the pain in an acute inflammatory pleuritis, but when it does occur it seems to be persistent and does not disappear with the onset of a pleural effusion. This symptom has not been noted in the two cases which I have observed.

4. *Weakness and Loss of Weight*.—Progressive loss of weight and of strength seem to be very important clinical features.

5. *Pressure Effects*.—The symptoms caused either by extension of the tumor to adjacent structures or by its metastases must obviously be extremely variable. The change in voice, the inspiratory dyspnea and the edema of the right arm noted in the case here reported are typical examples. Such symptoms when present may be very helpful or, on the other hand, somewhat confusing in the diagnosis.

In the clinical findings perhaps the most important is that typical dull percussion note which has been characterized as *brettharte Dämpfung*. With this are associated various changes in the voice and breath sounds. The pulse-rate is increased in spite of the absence of fever and night sweats. The presence of a bloody pleural effusion—in which diagnostic cells have been found—and the absence of acid-fast bacilli in the sputum are very important as aids in the differential diagnosis. Rarely such bacilli have been found in the sputum, for the coincident occurrence of pulmonary tuberculosis has already been noted. Obviously in cases in which tubercle bacilli are found the diagnosis becomes complicated and correspondingly more difficult.

DIAGNOSIS

In cases exhibiting these clinical manifestations where the possibility of primary lung cancer must be considered, the following practical methods should help in establishing a definite diagnosis, namely, (1) roentgenoscopy, (2) bronchoscopy, and (3) thoracotomy.

1. *Roentgenoscopy*.—In obscure thoracic conditions Roentgen examinations are now being regarded as almost indispensable. As a diagnostic aid they are very helpful when used in association with all the other obtainable data. Wiczkowski's¹⁴ warning should here be emphasized: "They (Roentgen rays) should be used merely to confirm the clinical diagnosis." The fact that a large number of cases were diagnosed *intra vitam* by Otten¹⁴ and by Müser¹⁵ with the help of the Roentgen ray demonstrates the great practical value of such examinations.

2. *Bronchoscopy*.—The bronchoscope may be used successfully in determining the nature of the pathologic process. Direct examination of the affected parts or the excision of a fragment of diseased tissue for microscopic study whenever possible can give information that will "clinch the diagnosis." By this method Karrenstein¹⁶ was able to observe the tumor arising from the right main bronchus of his patient, and von Schrötter¹⁷ in a case of his excised a piece of the tissue for microscopic examination. Ephraim's¹

14. Otten: Fortschr. a. d. Geb. d. Röntgenstrahl., 1906, ix, 369.

15. Müser: Mitt. a. d. Hamburg. Staatskrankenanst., 1906-1908, viii, 111.

16. Karrenstein: Charité-Ann., 1908, xxxii, 315.

17. Von Schrötter: Ztschr. f. klin. Med., 1907, lxii, 508.

success in diagnosing clinically primary lung carcinoma by bronchoscopic examination has already been noted.

3. *Thoracotomy*. — An exploratory thoracotomy ought to have the same diagnostic value as an exploratory laparotomy. Among the cases in which thoracotomy has been done may be mentioned several of those in Müser's¹⁸ series, the case of Martens,¹⁹ who reports a *Probeinzision* under local anesthesia in a case of advanced lung carcinoma, and one of Lawra-son Brown's,²⁰ who describes a case in which thoracotomy revealed mediastinal sarcoma where mediastinal abscess had been suspected. Adler¹ urges exploratory thoracotomy quite emphatically. With the advance of local anesthesia and thoracic surgery this diagnostic procedure ought to be looked on more favorably and be unhesitatingly used whenever indicated.

TREATMENT

Early recognition and complete extirpation of the cancer offer the only hope of permanent cure in this desperate disease. Until very recently there really was no curative treatment for these most unfortunate patients, but since the rapid development of intra-thoracic surgery the operative removal of an entire lung or a portion of it has become feasible. In addition to the lung resections reported by Ders, Len-hartz, Küttner and Sauerbruch, quoted by Weller,⁷ there are on record still a few more. Müller²⁰ resected the right upper lobe of a 3-year-old child for suspected malignancy. He declares that a circumscribed tumor recognized early should by all means be removed. Kümmell²¹ removed the entire right lung in a case of lung cancer presumably originating in the bronchial glands. As a preliminary to the operative surgery of the thoracic cavity he advises the production of artificial pneumothorax. Friedrich²² reports the resec-tion of entire lobes for the cure of pulmonary tuber-culosis. Willy Meyer²³ states that sixteen cases of pneumonectomy for bronchiectasis have been reported until now. It must be admitted that resection of the lung is a rather difficult technical procedure, but if the operative difficulties can be overcome in the individ-ual case, a successful outcome is to be expected. Much of the lung substance may be removed without disturb-ing the respiratory function, for according to the recent experimental investigations of Bernard and Mantoux²⁴ this function can be carried on with the lung capacity reduced to as low as one-sixth of its nor-mal volume. Therefore, in the present state of intra-thoracic surgery, no operable case of primary lung car-cinoma should be allowed to go on to inevitable death when by operative interference it may be possible to clean out the neoplastic tissue and thus effect a perma-nent cure.

Radium, thorium and mesothorium are now being tried out in the treatment of malignant disease. Marked success seems to be attained in some instances; in others the results seem to be complete failures. In superficial cancers they often seem to be absolutely curative, but in deep-seated lesions they do not yet seem to do much good. In one of Müser's¹⁸

cases and in Marschik's²² case these emanations were tried, but in neither case did they do any good. Schitten-helm and Betz²⁵ believe that with their newly intro-duced "deep" technic these agents may become more beneficial in the treatment of internal diseases. The general opinion at present is that it is too early as yet to pass final judgment on the value of these new powerful physical agents. Should they be found by further experience capable of producing the beneficial results that are hoped for, the use of these radio-active emanations in the treatment of this condition will follow as a matter of course. In the present state of our knowledge the question whether or not to use them in a case must be decided by a consideration of all the aspects of that particular case.

CONCLUSIONS

1. It must be emphasized that primary carcinoma of the lung as a distinct pathologic and clinical entity is by no means as rare as it is generally thought to be.
2. The group of symptoms that should be regarded with suspicion are progressive dyspnea, persistent cough, hemoptysis, pain, weakness and loss of weight, and pressure or metastatic effects.
3. Signs of solidification of the lung, the presence of hemorrhagic pleural effusion, tachycardia without fever, and the absence of tubercle bacilli in the sputum are the significant objective findings.
4. A diagnosis based on these clinical phenomena may be established by the use of the Roentgen rays, the bronchoscope or thoracotomy.
5. Resection of the affected parts by radical opera-tive procedure should be attempted in every operable case.
6. Radio-active emanations may prove to be of therapeutic value and, if possible, can be given a thorough trial whether surgery is resorted to or not.

Physicians Defense Building.

THE USE AND ABUSE OF THE TONSILS*

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It is with no small degree of tremulous fear and daring courage that I stand before so critical and representative an audience in an attempt to defend a helpless organ, whose guilt has been so uniformly acknowledged—an organ which has been accused of being an accessory to the fact in causing so many and varied pathologic conditions, of more or less serious nature, and which has, through professional and lay expressions, and even through the public press, been condemned without a full and impartial hearing. A sparkling hope that the innocent may be prevented from suffering with or for the guilty, that in the future, many tonsils may be rescued from unnecessary and undeserved slaughter, makes me feel privileged to present some relevant facts, which, alone, make true science. This hope is augmented by the successful escape from a somewhat similar series of indiscrimi-nate massacres of the ovary, the appendix, the inferior turbinates, etc.

18. Martens: *Jahresb. f. Chir.*, 1911, p. 311.

19. Brown: *Bull. Johns Hopkins Hosp.*, 1914, xxv, 112.

20. Müller: *Jahresb. f. Chir.*, 1911, p. 370.

21. Kümmell: *Jahresb. f. Chir.*, 1911, p. 320.

22. Friedrich: *Jahresb. f. Chir.*, 1911, p. 323.

23. Meyer, Willy: *Ann. Surg.*, 1914, ix, 7.

24. Bernard, Le Play, A., and Mantoux, C.: *Capacité pulmonaire minima compatible avec la vie*, referred to in *The Smallest Lung Capacity Compatible with Life*, editorial, *THE JOURNAL A. M. A.*, June 7, 1913, p. 1794.

25. Schittenhelm and Betz: *Deutsch. med. Wchnschr.*, 1914, xl, 1147.

* Read before the Section on Diseases of Children at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

There is not a fraction of a doubt that the removal of the tonsils is oftentimes indicated, and that innumerable good and commendable results have been accomplished by such surgical treatment. It is not, therefore, my object to attempt either to condemn or to revolutionize modern tonsil surgery in general, or to ridicule the professional attitude toward such procedure, but rather to endeavor to crystallize the views of both radical and conservative internists into such a form as will aid each of us in solving this complex problem. Probably no other instance exists in which so many human lives are involved by such a solution. In 1912, there were in Philadelphia 37,000 recommendations to parents made by medical inspectors that these organs receive immediate attention, constituting about 26 per cent. of the recommendations for all defects in that period. In New York City, during the same year, medical inspectors had supervision of 825,000 schoolchildren, and reported that approximately 30 per cent. of the children examined had hypertrophied tonsils. As it was the desire of the department to fix a certain standard as to when operation should be recommended, a letter was sent to a number of eminent specialists in nose and throat diseases asking them what, in their opinions, were the exact indications for the operative treatment of enlarged tonsils, and it is a very significant fact that no two of these specialists agreed as to the exact details. The question therefore involves the disposition of the tonsils in millions of children throughout the United States, and should be sufficiently vital to demand most exacting consideration.

PROTECTIVE FUNCTIONS

It is a universally accepted scientific fact that every organ is of essential value and service to the organism which contains it, and the organ under discussion has not yet been proved to be valueless. The faucial tonsil is a natural organ; some questions pertaining to its physiology have been definitely settled; judgment on others is so uniform as almost to force conviction, and some remain yet to be solved. From their important anatomic position, the ensemble of adenoid bodies—more commonly known as the Waldeyer ring—situated at the very entrance of the respiratory and digestive passages, would be looked on as constituting the first line of defense against microbic invasion, and of this group, the tonsils stand out most prominently. Primarily, it is the function of all lymphatic glands to act as a sort of filter for lymph. Thus, should the lymph contain any foreign substances or toxic material, these are to be halted within the gland, not alone because of the anatomic peculiarities of the structure, but also because of the cellular hyperplasia resulting from the same. This so-called barrier action is a most important function, and the tonsils are arranged like sentinels at the most vital orifices of the human body. That this has been most clearly demonstrated by Ruffer, Ribbert and others. In cases of cancer from malignant tumors, dead corpuscles, blood-corpuscles, bacteria, etc., are taken up by the lymph, and until a lymph-node is reached, at least, deposited in it, or are taken up by the lymphatic system. Filtered lymph passes

others. Stöhr has demonstrated that the tonsils are actually traversed by an enormous number of leukocytes, which exercise a kind of migration toward the oral cavity; actually demonstrating the passage of leukocytes through the tonsillar epithelium into the buccal cavity, which is a medium for various micro-organisms. This continual and normal condition is often termed Stöhr's phenomenon. Likewise, Metchnikoff found that when he removed a particle of mucus from the surface of the tonsils of a person in good health, he always could demonstrate that it contained numerous leukocytes, especially small phagocytes, filled with micro-organisms of all kinds. Gulland, Kümmel and Lindt have also demonstrated the presence of these leukocytes. Phillip Stöhr states that the leukocytes that wander through the epithelium of the tonsils are so numerous that they may be regarded as the most fertile source of the salivary corpuscles. Von Chiari agrees in this opinion and thinks that the tonsils serve for the purpose of the formation of leukocytes. Adami and Nicholls, as a result of careful investigations, concluded that while the tonsils are themselves, to a limited degree, phagocytic through their lymphoid cells, polymorphonuclear leukocytes in considerable numbers make their way from the blood-vessels to the surface of the tonsils, through their epithelial lining. These leukocytes are strongly phagocytic and their marked activity suggests that the tonsils form one of the most powerful barriers of the body against invasion by infectious micro-organisms.

Brieger has proved that the lymphocytes in the tonsils, though devoid of ameboid movement, enter the epithelium of their own accord, and he has demonstrated their presence in lesser or greater degree in the epithelium of the tonsils. We have to assume a vehicle which carries the lymphocytes from the adenoid tissue; this vehicle is the lymphatic juice which fills all the crevices between the tissue, and which reaches the surface through the finest canals. The cause of the movement of the lymphatic current, according to Brieger and Goerke, is to be found in a difference of pressure in the afferent lymph-vessels and the free surface. Increase of blood-pressure increases the force of the lymphatic current and carries along a larger amount of lymphocytes to the surface of the tonsils. In addition to the specific effect attributed to these lymphocytes, the current, *per se*, militates against the entrance of germs, as the mechanical effect of the current, assisted by the lymphocytes, washes away the infectious micro-organisms.

Harrison Allen, Kayser, Pluder, Schoenemann, George B. Wood, Ashby and others state that the tonsils undoubtedly form lymphocytes in the germinating follicles. Retterer also proved the existence of clear germinating centers in the follicles of the tonsils, and demonstrated the presence of lymphatic vessels occupying the entire follicular mass of organs, forming a system of closed lymphatic canals which do not open into the connective tissue reticulum by stomata or by their extremities. Piersol found that the epithelium covering the folds and the depressions of the tonsillar surfaces is completely infiltrated with lymphoid cells, and that great numbers of the cells escape into the oral cavity to become the salivary corpuscles, of which the tonsils are a most important source.

J. Gordon Wilson states that plasma-cells are derived from these lymphocytes, and are engaged in removing and utilizing cell material which has broken down, and that their presence, instead of indicating

ic function has been
field, Pruden and many

disease, proves that the tonsils are physiologically active. D. J. Davis concurs in this view of the origin of plasma-cells, although Unna thought that they were derived from the connective tissue.

Hugh T. Ashby, in an analysis of three thousand cases of enlarged tonsils (and adenoids) concluded that they enlarge in order physiologically to augment the lymphoid tissues of the body. In every fetus, after the age of 6 months, it was possible to detect some adenoid tissue, but in infancy and early childhood, the lymphatic structures were at their maximum—exactly at a time when enlarged tonsils (and adenoids) are very common. I have presented sufficient evidence, therefore, that the tonsils are generators of lymphocytes and leukocytes, which are undoubtedly present in large numbers, where they may even be stored up for ready action, when called on, and that in addition to their specific bactericidal action, a constant stream of lymph from the depth to the surface exists, which alone would protect by counteracting an invasion of micro-organisms and by clearing the surface of these undesirable settlers. This may be termed the protective function of the tonsils.

DEFENSE AGAINST ABSORPTION

In addition to actually opposing the systemic invasion with infectious micro-organisms by this protective action of the cellular elements, it has been conclusively proved that the tonsils, *per se*, actually antagonize the entrance to their interior of infectious germs. Hodenphyl conducted a careful series of experiments dealing with the phenomena of absorption at the level of the tonsils and found that the epithelium prevented absorption, which latter became possible only when the epithelium was destroyed, or when the substances employed were introduced under the epithelial bed, and that even under these conditions, it was extremely slow. He employed fatty substances, powders and colored solutions as recommended by Labbé and Sirugue. He found that the epithelium had the same protective rôle at the level of the tonsils as at the level of the buccal mucosa, and that the crypts augmented its extent.

Even in the normal state, the epithelium is more or less irritated, and above all, at the bottom of the crypts, where Labbé and Sirugue have observed the incessant phenomena of cellular renovation. This epithelial irritation is due to the presence of dust, or small foreign bodies, which penetrate into the crypts; it is due above all to the existence at the surface of the tonsil of pathogenic microbes, which are found incessantly in the normal state. These micro-organisms, although in the crypts, are nevertheless on the exterior of the tonsil, and it is the defensive reaction of the epithelium which prevents their penetration. It is only when the epithelium is destroyed that they penetrate, and even in such instances, they rarely pass beyond the epithelial bed.

The leukocytes have not solely a phagocytic rôle in regard to microbes, but they destroy also their toxins by producing antitoxins, nucleins and oxydases, which have positive chemotoxic properties in regard to white corpuscles, and exalt their vitality.

The phenomena of absorption at the level of the tonsils have been further studied experimentally in the laboratory of Landouzy, at the Laennec Hospital, by Marcel Labbé and C. Levi-Sirugue. They found that the epithelium prevents absorption, and their findings were in full accord with those of Hodenphyl.

Jonathan Wright, in a personal communication (to Wendell C. Phillips) writes:

My experiments seem to furnish conclusive evidence that under normal conditions, bacteria do not penetrate the epithelial layer of the tonsil in sufficient numbers at least to set up disease. Yet, we know from clinical experience that nerve shock from fractures, hemorrhage, nasal operations, uric acid, sudden cold, etc., produces systemic changes whereby infection is more easy and more dangerous. I believe that the mechanism causing surface infection is a chemicophysical change set up by impulses carried along the sympathetic nerves. This produces an alteration in the surface tension existing normally between the bacterial denizen of the tonsillar crypt and the epithelium which lines it. By virtue of this change, the living pathogenic agent enters the system.

Wright contends that the selective action of the tonsillar epithelium on dust and bacteria, whereby the latter at times are prevented from passing, and at other times are allowed to pass freely into the lymph-channels, is not fully explainable by the laws of immunity, but rather that we are dealing with living matter which obeys the laws of heredity and evolution, and that adaptation by natural selection is the only tenable explanation as to why the protoplasm of the epithelial cells of the tonsillar crypts acts in such a manner.

Clinically, we know that infectious germs, especially streptococci, are commonly found in the tonsillar crypts of healthy individuals, and that autoinfection is probably essential to induce follicular tonsillitis. Wright also adds the significant comment that it is a highly interesting sequence of events which takes place between the time the micro-organism floats on food or in the air into the tonsillar crypts and the time it reaches the deep lymphatics which drain the tonsil—which he regards as a biologic process of a physico-chemical nature, affecting the surface tension of the colloids, of which the cells and bacteria are composed.

The defense of the tonsil against absorption, which has been so conclusively demonstrated experimentally, has been exhibited clinically by most observers, notably Jacobi, Fränkel, Goerke and others, who attributed the general mildness and low mortality-rate of tonsillar, as compared with other diphtherias, before the days of antitoxin, to this specific defense. It is simply remarkable how many and varied pathologic conditions are found by pathologists to exist, strictly confined to the tonsil, that are not found elsewhere by the internist—again adding clinical evidence of the defensive action of these organs.

OTHER FUNCTIONS OF THE TONSILS

Internal Secretion.—Escat believes that the faucial tonsils have not for their only functions those above enumerated, but that they also possess a physiologic and biologic function, due to an internal secretion. With Allen, he agrees that the tonsils secrete a principle, the exact nature of which it has been difficult to determine, but which may be useful in the development and to the growth of the individual, and probably to the growth of the skeleton. Masini believes also that the tonsils are the seat of an internal secretion, somewhat similar to that of the suprarenal gland, and he succeeded in producing an increase in the arterial pressure by injecting many animals with an extract of tonsils. E. L. Shurley subscribes to the presence of this internal secretion. Leto discovered fuchsinophil cells in the human tonsils, a similar to those which Schridde found in the thymus gland. He states that

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their origin is not known, but they may develop from the perivascular tissue, and in his opinion, they have a secretive function.

Lubricant.—Frank E. Miller emphasizes the importance of the value of the tonsils as a lubricant. The frequency with which atrophic pharyngitis follows tonsillectomy adds clinical evidence relative to the necessity of this function, and John H. Johnson further endorses this point of view.

Voice.—That the tonsils possess important mechanical, acoustic and phonetic functions very few will deny. Their consistence, shape, size and presence or absence give structural variation to the resonance cavities, and create as well as determine differences in individual timbers of the voice. They play an important rôle in tone formation, and the excellent work of Faulkner along these lines is invaluable. J. Price Brown and many others have reported a large number of cases in which the singing voice had been practically destroyed by tonsillectomy.

Immunity.—Digby asserts that by a process of continual autovaccination, the tonsils (in common with the solitary follicles of the intestine, Peyer's patches and the vermiform appendix) protect the body against chance infection. By chemotaxis, all bacteria in the vicinity are attracted through the overlying epithelium into the lymph-nodule. This bacterial attack, invited into the region most favorable to the defensive mechanisms of the body, is nearly always repulsed; lymphocytosis takes place and a great excess of specific bacteriolytic and antitoxins are also produced, which enter the general system and combat the attack at a more vulnerable point. Thus, immunity against disease is acquired without the individual having apparently had the disease. The same theory is advanced by Packard, who holds that the micro-organisms of acute inflammatory rheumatism are streptococci weakened through this action of the tonsils, and that otherwise we would observe septic diseases oftener. MacKenzie also endorses the existence of this function.

REMOVAL OF THE TONSILS

It is not within the province of this paper, nor will the time allotted permit me to enter into a discussion of the tonsils in their relationship to other diseases. The quartet comprising tonsillitis, rheumatic fever, endocarditis and chorea is almost classic. In addition, competent observers have considered the tonsils as a focus from which may be disseminated tuberculosis, diphtheria, empyema of the nasal sinuses, gastric ulcer, urethritides, etc. But we also agree that the uterus, breast and stomach constitute the organs which become the seat of the vast majority of malignant growths which produce metastases, and yet no one has had the courage to suggest wholesale removal of any of them as a prophylactic measure. Furthermore, we must not lose sight of the fact that the removal of the tonsils is not so simple a matter as is commonly supposed. Although a large number of deaths, complications and sequelae never reach the medical press, very recent literature gives evidence of many deaths and complications resulting from serious hemorrhages, local traumatic disturbances, gangrene, diphtheria from auto-infection, infection of the middle ear, surgical shock, asphyxia, hyperpyrexia, general septicemia, surgical emphysema, pulmonary infarct, septic infection of the lungs and its serous membranes and also of the cer-

vical glands, latent tuberculosis in the lungs and adjacent glands, status lymphaticus, serious disturbances of the nervous system, amygdalotomy rash, etc.

With these various well-confirmed expressions before us, who can conscientiously refuse to enter a most energetic protest against operative intemperance and to place himself on record as considering the indiscriminate removal of the normal tonsil an absolutely inadmissible proceeding? We cannot and must not be guided by any rule of thumb, but must carefully study and consider each case as an individual entity. Very few will dispute the propriety of tonsillectomy when these organs greatly interfere with respiration and thus lead to insufficient oxygenation of the blood; (2) when there is no reasonable doubt as to their being, directly or indirectly, an etiologic factor in the production of disease. But the size of the tonsil may no means a pathologic symptom; a small tonsil may prove more harmful than a large one, and yet size is frequently considered one of the chief indications, if not the chief indication for removal. The Bureau of Child Hygiene, in New York, has established the following very practical standard as a guide to its medical inspectors, namely, that no case was to be considered a true hypertrophy of the tonsils, unless the hypertrophy was such as to interfere with the nutrition of the child, or to cause secondary disturbances, interfering with its health, and incidentally with its school progress.

In conclusion, it is my firm belief that the tonsils were put into the throat of man with good, and not evil intent, to serve a physiologic rather than a pathologic purpose, and that the normal tonsils have physiologic, chemical and phonetic functions which should not be indiscriminately eradicated.

259 South George Street.

ABSTRACT OF DISCUSSION

DR. JOHN ZAHORSKY, St. Louis: The tonsils are necessary, not only for the production of immunity to the child, but for protection to the air-passages. Removing tonsils for repeated attacks of tonsillitis, is often followed by recurrent attacks of bronchitis. The tonsil protects the air-passages, not perfectly but in a large measure. I do not advise the removal of tonsils before the child is 10 or 12 years of age, unless there are definite pathologic signs for their removal. I even go so far as to say no tonsil should be removed without a consultation of the pediatricist and the nose and throat specialist. I think adenoids protect the middle ear instead of causing middle-ear trouble. Unless they are so large that they interfere with respirations I would not advise their removal. We get middle-ear disease when the adenoids or tonsils are defective or when they are so large that they obstruct. When adenoids obstruct the postnasal space, they should be removed, but some tissue should be left as a protection.

DR. THOMAS S. SOUTHWORTH, New York: This paper is an indication of the fact that time is training us on this question of the "slaughter" of tonsils. In my experience in the dispensary in New York, more than half the cases sent in from the schools with the statement that the tonsils needed removal, were sent back because there was no good reason for their removal. One thing in Dr. Comroe's paper I will comment on. There is a great deal in literature referring to the tonsillar structures as a ring of lymph tissue which is the first line of defense of the pharynx. It reads in many cases as though this comparatively small area was in some way able to reach out for bacteria as they pass down the throat and seize and destroy them. The tonsil itself seems very vulnerable to disease. If the tonsil has any defensive

power it is through some form of internal secretion. If it acts as a sentinel a hypertrophied tonsil would be infinitely more valuable because it would present a much greater area for defense.

DR. J. H. COMROE, York, Pa.: The chief reason I was so desirous of presenting the tonsil question before this Section, as Dr. Zahorsky has hinted, was to stimulate better teamwork among the general practitioners, pediatricists and laryngologists. I have heard it frequently stated by nose and throat specialists that they themselves wished for this; that they oftentimes were compelled to carry out the specific instructions of the family physician against their own better judgment. Conversely, these same specialists have urgently advised the immediate removal of the tonsils when either the general practitioner or the pediatricist recommended non-interference. There is no absolute standard as to what constitutes a "normal tonsil." Each case must be considered as an individual entity. It is my belief that the tonsil is spoken of as the direct etiologic factor in systemic disease in too many instances. If I can drive just one point home, especially among general practitioners, namely, that the tonsil should be studied more carefully in relation to each patient, and that its removal should never be indiscriminately considered, I will feel that I have accomplished my chief purpose.

THE RELATION OF HEAT TO THE MORBIDITY AND MORTALITY OF INFANTS FROM GASTRO- INTESTINAL DISEASES*

HENRY F. HELMHOLZ, M.D.
CHICAGO

During the summer of 1912 we began a study of the influence of climatic conditions, particularly of heat, on the health of infants. In this study a certain number of babies that were coming to the infant-welfare stations of Chicago were observed for a prolonged period of time, by daily visits in their homes. Maximum and minimum thermometers were installed in the babies' rooms. These were read daily, the infants' temperatures taken, notes were made regarding the babies' general condition, the number of passages in twenty-four hours, and of the general hygienic condition of the homes. In thirty of these homes record was also kept of the humidity. The summer of 1912 was relatively cool, and inasmuch as the results of our observations were inconclusive with regard to any direct influence of heat on the well-being of the infant, it was thought that a renewed study in a more severe summer might give different results.

The work was therefore continued during the summer of 1913. Forty-six cases were studied, the observation of the majority extending over a period of about two months.

As to what should constitute a gastro-intestinal disorder we arbitrarily accepted four or more loose passages in twenty-four hours. All told, gastro-intestinal disorders were observed thirty-nine times in twenty-nine different infants; seventeen infants passed through the entire period without any disturbance whatsoever.

It is impossible here to give a detailed discussion of all of the observations; so the results will be briefly reviewed.

* From the Otho S. A. Sprague Memorial Institute Laboratory of the Children's Memorial Hospital.

* Read before the Section on Diseases of Children at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

I. ROOM TEMPERATURE IN RELATION TO TEMPERATURE OF INFANTS WITH GASTRO-INTESTINAL DISORDERS

In the 46 cases studied, 17 infants had no gastro-intestinal disturbance whatsoever, 20 had a single attack, 8 had two attacks, and 1 had three attacks. A tabulation of these disturbances (Table 1) with the infant's temperature and the room temperature on the day preceding and the day of the onset shows that in 14 out of the 39 instances, on the day of or the day preceding the attack, the infant's temperature was 100 F. or over, and in four instances it ranged between 99.5 and 100. Of the 18 infants that showed hyperthermia the room temperature was 90 F. or above in 12 instances and below 90 in 6.

TABLE 2.—INFANTS' TEMPERATURE IN RELATION TO MAXIMUM INFANT TO ONSET OF DIARRHEA

No.	Age in Months	Date of Onset	Child's Temp., F. Day Previous	Child's Temp., F. Day of Onset	Max. Room Temp., F. Day Previous	Max. Room Temp., F. Day of Onset	Remarks
1	2½	July 30	99	98	84	95	.....
2	3	July 11	99	98	78	73	.....
3	3	July 26	99	98.6	76	82	.....
4	3	July 14	100	104.2	84	92	Died July 22. No care
5	6	July 28	100	98	86	89	Died July 31. Atrophy. Death in 24 hours.
6	8	July 24	100.4	99.4	84	83	.....
7	4	July 29	99.6	100	94	88	Died July 30
8	7	July 5	98.8	99.2	100	96	Died July 20. No care
9	10	July 23	99.4	99.2	98	96	.....
10	10	Aug. 6	99.4	99	100	102	.....
11	5	Aug. 7	98.6	100	82	78	.....
12	3	July 19	99	98.6	84	84	.....
13	3	June 28	..	98	..	93	Died July 14. No care. Overfed by Father.
14	3½	July 26	97	97	84	78	Died July 31. Ac. Intox. in atrophy
15	9½	July 29	99	99.2	92	92	.....
16	5½	Aug. 2	99	99	88	86	Careless mother
17	9	Aug. 16	99	99.6	84	94	.....
18	9	Aug. 4	98.6	99.4	95	96	31 in 48 over 90 F.
19	10	Aug. 25	99.4	99.6	84	88	.....
20	10	July 9	99.8	100	100	96	Careless mother gave melon
21	5	July 31	100	100.2	84	85	.....
22	8	July 19	99	99	76	82	.....
23	4	July 31	100	100	90	88	.....
24	4	July 7	99	99	94	90	.....
25	4	Aug. 25	98	101	89	92	36 in 46 over 90 F.
26	6	July 11	99.2	98	91	75	.....
27	8	Aug. 10	99.6	98	89	91	.....
28	7	Aug. 23	97.1	97	84	76	.....
29	7	July 1	..	98.6	..	88	Loose movements for 2 months
30	12	Aug. 20	98.6	98.4	89	90	.....
31	10½	Aug. 9	98.8	99.8	84	92	.....
32	6½	Aug. 20	98.6	100.2	92	82	.....
33	6½	July 21	99.6	100.2	82	85	22 in 42 over 90 F.
34	8	Aug. 11	100	98.5	101	94	.....
35	8	July 7	99	..	..	90	34 in 42 over 90 F.
36	6	Aug. 21	98	100	98	94	.....
37	6	July 9	98.4	99.2	108	98	43 in 44 over 90 F.
38	6	July 21	99.4	99	96	110	37 in 44 over 95 F.
39	6	Aug. 5	100	100	100	108	.....

Of the 21 cases that had no fever at onset the room temperature was 90 or above in 13 instances and below 90 in 8, showing that the proportionate number of instances in which the room temperature was above 90 F. was just about the same in those cases with fever as in those without.

Of those cases in which the room temperature did not go above 90 F. 5 infants had a temperature of 100 or more, 1 infant had a temperature of 99.6 and 8 infants had no temperature above normal.

As in the preceding, this summary shows no definite relation of high room temperature to infant hyperthermia and gastro-intestinal disturbance. The aver-

age room temperature of the day before and the day of the onset of the dyspepsia was 89 F., in both instances. As seen from Table 1, the room temperature varied from 73 to 110 F., and with temperatures as high as seen in Table 1, it would seem likely that the room temperature on the day of the onset was responsible for the gastro-intestinal upset;

TABLE 2.—INFANTS, TEMPERATURE IN RELATION TO MAXIMUM AND MINIMUM ROOM TEMPERATURES

Case	Infants' Temperature		Maximum			Minimum		
	100 to 101	101+ F.	90+ F.	86 to 90 F.	85 F.	80+ F.	76 to 80 F.	75 F.
1	3	1	..	3	3	1	3	..
2	3	..	..	..	1	..	..	2
3	4	..	..	..	4	..	..	4
6	1	..	..	1	..	1	..	..
8	3	2	4	1	..	..	2	3
9	1	1	..	1	1	..	1	2
10	1	2	3	..	..	1	..	2
11	1	1	1	..	..	1	..	2
12	2	1	1	2	..	..	1	..
14	1	..	..	0	1	..	2	1
15	4	..	..	1	3	1	..	1
21	..	1	..	..	1	..	1	1
23	2	1	2	1	..	1	1	1
24	1	..	1	..	..	..	..	1
25	4	..	3	..	1	..	..	4
26	3	1	3	..	1	..	3	1
27	2	..	1	1	..	..	..	2
28	3	..	..	1	2	..	..	3
29	1	2	1	..	2	..	..	3
31	..	4	3	1	..	1	..	3
32	..	1	1	..	..	..	..	1
33	1	..	..	..	1	..	..	1
37	1	..	..	..	1	1	..	1
38	2	..	1	..	1	..	..	1
41	1	..	..	..	1	..	..	1
42	1	..	..	..	1	..	..	3
43	1	2	..	..	3	..	..	2
44	3	..	2	..	1	2	..	..
45	2	..	2	..	..	..	..	2
46	3	1	4	..	..	2	..	..
Total	55	20	33	13	29	12	14	49

over against these figures, however, must be set the total number of times in each case that the maximum room temperature exceeded 90 F. without any hyperthermia. For instance, in Cases 18, 25, 33, 35 and 37, in which of a total of 222 maximum room temperature readings, 156 showed a maximum room temperature above 90 F., the infant had no fever.

With reference to the incidence of dyspepsia it is seen by examination of the dates of onset that there is a fairly even distribution of the cases throughout the summer, with a slight bunching of the cases during the hot spell at the end of July (six cases in four days) and a similar grouping (six cases in five days) early in July, just during and after a drop of 25 degrees in the outdoor temperature. Carelessness on the part of the mother was charted in five cases.

II. FEVER IN THE INFANT IN RELATION TO HIGH MAXIMUM AND MINIMUM ROOM TEMPERATURES

Leaving out of consideration those cases of fever associated with diarrhea, there remain seventy-five instances in which the infant's temperature rose to 100 F. or above.

A summary of this series as given in Table 2 shows that the maximum temperature was 90 or over in 33 instances, between 85 and 90 in 13 and below 85 in 29 instances.

The minimum temperature was 80 or over in 12 instances, between 75 and 80 in 14 and below 75 in 49 instances.

Here again it is evident that there is no constant relationship between fever in the infant and high room temperature.

III. HIGH MAXIMUM ROOM TEMPERATURE IN RELATION TO HYPERTHERMIA IN THE INFANT

The analysis of the cases from this point of view is to serve as a further control on the relationship of heat to the incidence of dyspepsia, as well as on the relationship of fever to high room temperature. One hundred room temperatures over 95 F. were tabulated, as seen in Table 3. A summary of the tables is as follows:

Of the 100 maximum room temperatures, 46 were between 95 and 99; 44 between 100 and 104 and 10 above 105.

Of the 100 temperatures of the infant, 82 were between 98 and 99.5; 11 between 99.5 and 100 and 7 were over 100.

With room temperature higher than in any other series of cases there were only nineteen instances in which the infant's temperature was abnormal. In over 80 per cent. of the cases the infant, in spite of the high room temperature, could keep its body temperature within the normal range. Here again we see how well the infant can adjust itself to unfavorable circumstances.

TABLE 3.—HIGH MAXIMUM ROOM TEMPERATURES IN RELATION TO INFANTS' TEMPERATURES

Case	Temperature of Room F.			Temperature of Infant F.		
	95-99	100-104	105+	98-99.5	99.6-100	100+
1	4	..	..	4	..	..
2	..	3	1	4	..	..
3	1	1	..	2	..	..
7	1	..	..	1	..	..
8	12	..	..	7	1	4
9	1	..	..	1	..	..
10	..	1	..	1	..	..
11	..	6	..	3	2	1
14	..	1	..	1	..	..
15	..	3	1	3	1	..
17	1	3	..	4	..	..
18	1	..	..	1	..	..
19	2	..	..	2	..	..
20	1	..	..	1	..	..
22	2	..	..	2	..	..
23	..	3	2	1	1	1
24	..	2	2	2	2	..
25	..	2	2	3	1	..
26	..	4	..	4	..	..
27	2	..	..	1	1	..
28	1	..	..	1	..	..
29	2	..	..	2	..	..
30	2	1	..	3	..	..
31	2	2	..	2	1	1
32	..	3	..	3	..	..
34	2	1	..	3	..	..
36	2	..	..	2	..	..
38	3	..	..	3	..	..
39	1	..	..	1	..	..
41	2	..	..	2	..	..
44	1	3	1	3	1	..
45	..	2	1	3	..	..
46	..	2	3	5	..	..
	46	44	10	82	11	7

IV. THE RELATIONSHIP OF OUTDOOR (WEATHER BUREAU) TEMPERATURE TO ROOM TEMPERATURES

Here I want to call attention merely to the great differences which may exist between room and outdoor temperatures. As a rule, the room temperature reaches its maximum twenty-four hours after the outdoor maximum. In a selection of seventy-five instances of high maximum room temperatures the differences between indoor and outdoor maximum and minimum were as follows:

The indoor exceeded the outdoor maximum by 10 34 times, by 20 35 times, by 30 5 times, by 40 1 time.

The indoor exceeded the outdoor minimum by 10 37 times, by 20 4 times.

These great differences in the indoor and outdoor temperatures are unquestionably maximal. I feel sure that, if we had the street or backyard shade temperatures to compare with the room temperatures, the differences would be very much smaller.

V. REPORT OF CASES RESULTING IN DEATH

CASE 1.—Baby K., aged 3 months. Condition fair. Slight dyspepsia at beginning of observation. Condition grew gradually worse. Mother would not give any care. Observed from July 11 to July 22, 1912.

CASE 2.—Baby C., aged 4 months. Weight 8 pounds. Atrophic infant. Severe cough. Dyspepsia began July 26. Grew worse to July 30. Intoxicated. Child died July 31. Observed from July 12 to 31. No maximum temperature over 92 F.; no minimum over 82 F.

CASE 3.—Baby F., aged 4 months, weight 8½ pounds. Did well up to within twenty-four hours of death. Died July 30, 1913. Body temperature 100. Maximum room temperature July 28, 94; July 29, 88.

CASE 4.—Baby P., aged 4 months. Weight 8½ pounds. Dyspepsia from beginning. From four to eight bowel-movements a day. Mother would not follow instructions. No special symptoms. Child gradually lost ground and died July 28, 1913.

CASE 5.—Baby J., aged 3½ months. Weight 5½ pounds. Began observations July 19, 1913. In fair condition. July 28, diarrhea began. Maximum temperature, 89 F. July 29, temperature from 98 to 88 F.; July 30, from 96 to 88. Child died July 31, 1913. Temperature July 28, 100 F.

CASE 6.—Baby W., aged 3 months. Weight 7½ pounds. Good condition. Mother very ignorant. Diarrhea at onset. June 28, 1913, fifteen stools. Gradually improved on slow increase in food. Father overfed child. Acute exacerbation and death July 14, 1913.

VI. ANALYSIS OF FATAL CASES

Four of the six deaths occurred between July 28 and 31, the period of greatest heat, the others on July 14 and 22. Of the six cases three must be ruled out because of unwillingness on the part of the mother to follow out instructions. Of these, Infant 1 received no care. The final note by the nurse "Mother seems happy" explains the case. The second, Infant 6, was just recovering from an acute dyspepsia and was still on a restricted diet, when its father decided that it was not getting enough food, with the result that it died the following day.

The third, Infant 4, had a dyspepsia at the beginning of July and continued about the same all through the month. The mother was never willing to follow out instructions. It was overfed most of the time.

Of the three remaining cases, Case 2 must be excluded because in all probability the gastro-intestinal disturbance was parenteral in nature, secondary to a respiratory infection.

This leaves us just two cases, Infants 3 and 5, both atrophic, the latter more markedly so (5½ pounds at 3 months). Infant 3 died within twenty-four hours of the onset of symptoms without any special signs. Temperature was up to 100 F. The maximum room temperatures were 88 the day previous and 94 the day before that, which was not at all excessive when compared with the other maximum temperatures.

In Case 4, the dyspepsia began on the twenty-eighth with the infant's temperature up to 100 and a maximum room temperature of 89. The two days follow-

ing were very severe. The maximum and minimum room temperatures ranging from 98 to 88 F., and from 96 to 88 F. In this case alone one can see a possible direct relationship of heat to the death of the infant.

In these six cases the direct effect of heat could be responsible in only one or possibly two cases, and even in these there is a question as to the direct relationship of room temperature and infant death.

The factor of faulty diet, which is particularly harmful at this period, we have not mentioned because, in the great majority of our cases, it was carefully supervised and our instructions carried out except in cases which are especially noted.

In this paper it is my object merely to present the results of the last summer's work and in a future publication to go into a detailed report of the work during the past two years. In passing, I want to say that work of this kind has been done before on a small scale by Rietchel, Kleinschmidt, and others, who laid varying emphasis on the direct effect of heat on the child.

As a result of the summer's work the direct effect of heat alone must be considered as of relatively little importance. Infants can tolerate temperatures decidedly above those usually supposed to be harmful, without any bad effects, in fact, can gain in weight during such time.

Nothing is more striking than the difference in the amount of clothing that infants have on when coming to an infant-welfare station; on the first visit they are practically all overclothed, and even after repeated warnings the mothers insist on putting more clothes on their infants than is good for them. It becomes possible, therefore, to have an overheating of the infant with relatively low temperatures, provided that the clothing of the infant is wrong, and, in like manner, with high temperatures, it is almost sure to occur if the clothing of the infant is not properly adjusted. That clothing may act very intensely in producing fatal heat retention has been recently shown by experiments on animals in the Sprague Institute Laboratory of the Children's Hospital by Drs. McClure and Sauer.

There is no question that the summer heat increases the infant morbidity and mortality from gastro-intestinal disturbances. The efforts to explain this fact have been various. The explanations offered are based on the heat alone; or, on heat in conjunction with humidity. Another factor which has been emphasized has been faulty diet. In addition, more elusive factors like the general care of the baby have been taken into consideration. When a relatively large number of cases like the foregoing are studied, when the conditions with regard to heat, humidity and diet are rather uniform, and when in spite of this fact a certain number of infants show ill effects, even at relatively low temperatures, another factor must enter the field permitting of great individual variability. This factor we see in the clothing.

CONCLUSION

This study would indicate that it is a matter of improper adjustment of the individual to its surrounding temperature, rather than the height of the temperature that helps to swell the total of gastro-intestinal deaths during the summer. Our aim must be to educate the mothers to a realization that, as infants must be kept warm in the winter, so must they be kept cool in the summer.

104 South Michigan Avenue.

ABSTRACT OF DISCUSSION

DR. L. T. ROYSTER, Norfolk, Va.: Three years ago I undertook a study of this subject in twenty-six American cities. In no instance have I seen what I consider a proper amount of attention paid to humidity. A child can stand an intense amount of heat, provided there is a proper amount of radiation. In my investigations I found that children in the hottest climates, perhaps, and certainly in the hottest sections of this country, had comparatively little trouble of this kind when near the seashore. To show from a practical point of view what relation humidity has to this question of radiation, in spite of humidity, the children kept near the seashore in Norfolk rarely have trouble of this nature if sent before the first hot spell. When they do have trouble it is invariably following a land breeze, which is slight to start with and not cooling. The humidity and heat on the seashore may be the same, but the greater motion of the air from the almost constant breeze is greater and promotes radiation. Of course we have to take into consideration the question of home environment.

It is an established fact that the humidity varies in different parts of the same city. In my private practice I find that the children of the well-to-do do not begin to have the so-called summer diarrheas until several days later than the poorer children in the same community, which to my mind is due to the fact, as brought out by Dr. Helmholtz' paper, that the temperature in the poorer houses is much higher than in those of the more well-to-do.

The question of clothing as a preventive measure is an important one. I am accustomed early in the hot season to send out notices to remind my patients to decrease the baby's clothing and covering in hot spells. One of our text-books says a child should wear high neck and long sleeves all summer. Most of my children would die if they did. I advise the mothers to take off all of the baby's clothing except the diaper during the heat of the day. I feel that this question of the relation of heat and humidity should be studied carefully.

DR. R. M. SMITH, Boston: Humidity is certainly a large factor in the causation of digestive disturbances in infants. In our experience in the Floating Hospital, the days with high humidity, whether or not the temperature is much elevated, bring many patients for admission. A word should be said about therapeutics in these cases. These children require little starvation. Favoring the radiation of heat from the body is much more important than the treatment of the digestive tract.

DR. CHARLES DOUGLAS, Detroit: No one can deny the effect of heat as well as humidity on these babies. For many years I have been in the habit of educating the parents in anticipation of the warm weather, to lessen the food and clothing when a hot day comes, or even a hot half-day. Where I live we have no sea air, but I try to bring about a simulation of the same condition by affording opportunities for evaporation. Small children and young babies should be stripped to but one garment in hot weather, and with very young babies I would even remove the napkin and place them on a pad.

We should teach the parents to ask themselves how they feel on a hot day, and what do they do to become comfortable, and then give the child the benefit of the same reasoning. Unfortunately the people look on the child as some different animal and give it most outrageous treatment. They sacrifice the babies through their extreme ignorance.

DR. JOHN ZAHORSKY, St. Louis: No doubt the mortality in the early part of the summer is increased. The important question is, Does the direct external application of heat produce diarrhea? Is it the direct effect of heat that produces so-called summer diarrhea? That has not been proved. In fact the proof is the other way. I am not convinced that heat produces summer diarrhea. A few weeks ago the temperature was 100 in St. Louis. We had no diarrhea as a result of it. At our Foundling's Home the temperature was 99 in the nursery, and we did not have a single case of diarrhea. I do not think the evidence is conclusive that heat, by its

direct effect, causes diarrhea. Heat does produce a bad effect on a sick infant. This is especially true in the early part of July. The atrophic infant cannot resist the heat, but it dies from the illness it already had. Not that these prophylactic measures of keeping the baby comfortable should be neglected. I think in these diarrheas there is still another factor. That other factor must be searched out. As to humidity, that has been studied again and again. No one has been able to prove that humidity and summer diarrhea are directly connected. In order to study summer diarrhea properly, a series of cases should be reported with all attending circumstances. We should know the temperature and all the conditions, and hundreds of cases should be studied. We will never reach a solution by studying figures from our mortuary tables. I think some other factor is the cause of summer diarrhea.

DR. W. W. BUTTERWORTH, New Orleans: The greatest mortality in New Orleans is in the early part of the summer. We lose most infants in April and May and the latter part of the summer. High death-rate seems to be associated with seasons when we have a wide variation in the mercury. We have warm days and cold nights, and the infant cannot adapt itself readily to the wide variation. The new-born has possibly four times the surface area per pound of body-weight that the adult has. With their immature nervous systems the new-born are not able to respond to these wide variations. Certainly the mere matter of temperature does not account for these conditions.

DR. S. W. BURTON, Albuquerque, N. M.: I am in a city of 20,000 people, and the number of cases of summer diarrhea are very few there. We have a wide variation of temperature between day and night. This condition can be overcome by keeping the child in the shade in the day time. Our cases of children's disease in the summer are much less than those of eastern cities.

DR. T. C. MCCLEAVE, Berkeley, Cal.: To one from the West it is interesting to hear heat spoken of as causing this condition, with a temperature running in the 90's. In many sections of the West, where the temperature goes still higher, we have none of this trouble. A temperature in the 90's in some of these sections would be welcomed as a cool summer day. For weeks at a time the temperature in some sections ranges well above 100. In some places it reaches 110 or 115, and still we have none of this trouble; therefore it is clear that either the heat has no effect of itself in the production of these cases, or else that our heat has some different quality. The humidity in these hot sections is very low. It seems to me that this infant diarrhea is due, not to any single factor, but that the East must show a complex etiological condition.

DR. HENRY HELMHOLZ, Chicago: I am glad to hear Dr. Royster's remarks. It is important to emphasize the clothing as a factor. The important thing in these observations is on the negative side. All of these babies were constantly under the supervision of nurses. I wish we could enter the homes every day to see that the child is clothed as nearly in accord with the temperature as possible. Our temperatures are high and then low. You can see the difficulty of clothing these children when the daily variation is as high as 50 degrees, and that for a long period. If the child is clothed for 90, and then a few hours after that the temperature drops to 50 or even 40, you can see how readily these changes would affect the child. It is unquestionably harder for a child to lose heat on a humid day than on a dry day—all the more reason that the child be properly clothed for a hot, humid day. The custom Dr. Royster mentioned is one we tell our mothers to use for their babies. In answer to Dr. McCleave, I would say that where they have no summer diarrhea of course the temperature cannot play a rôle. We have a great deal of summer diarrhea in Chicago.

We must find out the factors producing it. It seems by controlling the hygienic condition of the child we can influence that markedly. It seems to me particular emphasis should be laid on the clothing.

THE INFLUENCE OF STARCH ON INFANT DIGESTION*

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No fact seems now to be more satisfactorily established in the physiology of infancy than that the starch transforming ferments of the saliva and pancreatic juice are actively present in very young infants, even at birth; and that such infants are therefore early capable of digesting moderate quantities of cooked starch.

Jacobi, in 1876, recommended the use of starch in the artificial feeding of infants from birth, and contended that it was utilized. This view was both confirmed and denied. Kerley and Campbell, in 1906, found by testing the stools for starch that twenty-three out of thirty infants showed a good starch capacity. In the same year Kerley, Mason, and Craig demonstrated the invariable presence of amylolytic ferment in 161 tests on the stools of twenty-six breast fed infants, of whom twenty-two were under two weeks old.

The latest important and conclusive work is that of Hess (1912), who aspirated with his duodenal catheter fluid from the duodenum of infants varying from a few hours to a year old. Amylase was found before new-born infants were put to the breast. During the first week of life the amount of pancreatic secretion thus obtained was very scanty, but contained the starch-splitting enzyme. Later there was both an increase of pancreatic secretion and a decided augmentation of amylolytic power. These findings seem to dispose permanently of the oft-repeated claims that starch has no place in the dietary of the first year, because of physiologic unpreparedness. In view of the known adaptability of the organism, it also seems reasonable to suppose that the starch-digesting function will develop more rapidly if stimulated by the administration of starchy food.

Until recently the ends attained by adding cereal, i. e., starchy decoctions to cows' milk feedings, have been presumed to be two-fold. Foremost stands the contention of Chapin that cereal diluents by their mucilaginous properties prevent mechanically the formation of large tough curds of casein, and render such coagula as are formed more permeable by the gastric juice. Second, though often very important, has been the view that the vegetable proteins of the grains thus added to the food serve to supplement the rather deficient absorption of the animal proteins of the milk in certain types of malnutrition.

While both of these facts seem well established, and have now long sufficed as explanations of the successful use of gruels as diluents in infant feeding, it would appear that they have another and probably more important field of action. This field is no longer exclusively that of the stomach and gastric digestion, but is transferred to the intestine, where the starch influences intestinal digestion, peristalsis, and absorption. The part played by these three functions in the normal nutrition of the infant cannot be minimized. Beside them, the functions of the gastric digestion may be said to take second rank, for the stomach is largely a receiving station, performing certain preliminary tasks. Comparatively little absorption takes

place in the stomach, the greater part occurring in the intestine. Modern fluoroscopic examination of infants, after a fluid bismuth meal, has demonstrated what we have long suspected clinically, that the fluid contents of the stomach begin to pass the pylorus into the duodenum within a few minutes after ingestion. One of the chief duties of the stomach, therefore, is to retain behind the watchful pylorus all coarse masses of food, whether curds or other substances, which are not yet fitted for intestinal treatment, and to disintegrate them until they can properly be allowed to pass.

As already indicated, nutrition from the small intestine depends on the orderly conduct of its interlocking processes. Here the powerful and varied action of the hepatic, pancreatic, and intestinal secretions combine to split the food elements into their endproducts for absorption. Peristalsis slowly kneads and churns the chyme, so as to bring all portions into contact with the bowel wall for absorption, and also to mix its secretions with the mass. If peristalsis be hurried, or the intestinal mucosa be irritated, or denuded of its epithelium, the orderly processes are no longer followed and assimilation suffers. How, then, do such disturbances arise? Probably from two sources. First, from fermentation or other abnormal cleavage of the food elements in the stomach, which causes irritation when they are passed into the intestine. Again, either secondarily or primarily, from similar fermentation or abnormal cleavage during intestinal digestion.

We owe to Finkelstein the attention which has been directed to the effect of the fermentation of the carbohydrate sugars on the mucosa of the small intestine, and on intestinal peristalsis. His view is that the presence of sugars in excess, or the presence of the products of an abnormal fermentation of such sugars, especially of milk-sugar, irritates the mucosa, even at times causing partial denudation of its epithelium, and that both these and the increased peristalsis which they cause, hurry the contents through the bowel, not only causing loose movements or diarrhea, but also interfering with absorption and assimilation.

I would go further than Finkelstein in my belief that fats as well as sugars produce these untoward results.

Let us consider for a moment some of the historical and clinical evidence for accepting and extending Finkelstein's belief. Jacobi long ago called attention to the laxative effect of sugar. Also, certain types of diarrhea in infants with abundant frothy stools, acid reaction, and irritation of the buttocks, have been more or less generally associated with the sugar in the food, as well as with the fermentation of other carbohydrates in excess. In this connection, you will recall the use of molasses as a stimulating enema, and possibly some of you, in your earlier days, have been subjected to a personal spring housecleaning with the time-honored remedy of sulphur and molasses, under the delusion that the molasses played no more active part than that of an agreeable vehicle for the sulphur. You are doubtless conversant with the use of semi-fluid malt preparations as a laxative, when added to an infant's bottle or dietary.

When, however, Keller undertook to overcome the acidosis caused by a relative intolerance and malassimilation of the fat of cows' milk by the substitution for the hydrocarbon fats of approximately equal caloric values of the carbohydrates present in his "malt-soup extract," he promptly found that he could not give sufficient for his purpose without causing looseness of

* Read before the Section on Diseases of Children at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

the bowels. To prevent this, he was forced to employ in his mixture the starch of wheat-flour. In the usual process of preparing malt-soup, the wheat flour is cooked with the water and milk and thereby gelatinized. With the addition of this gelatinized starch, considerable quantities of the thick, semi-fluid preparations of maltose and dextrin can be given to young children without causing undue looseness of the bowels.

Again, when the use of so-called buttermilk began to be generally employed abroad for the feeding of infants suffering from fat intolerance, the preparation used was rarely straight buttermilk. The so-called buttermilk, which was almost universally employed, was a compound of ordinary buttermilk, or artificial fat-free buttermilk, boiled wheat; rice, or corn-flour, and cane sugar. The virtues of this mixture, which by the way, had at the time surprisingly little vogue in this country, in view of its wide use abroad, were generally ascribed to its low fat-content, and as I have elsewhere pointed out, were also undoubtedly due in part to the non-coagulability by rennet and acid of the already precipitated lactate of casein.

Teixeira de Mattos, in his original communication, states that the flour was added empirically to prevent the buttermilk curds from clumping together. He says also that the quantity of the flour is empirical, and, being small, that how much of it was retained in the infant's body was of minor importance. Even the sugar was added quite as much for taste as for food value. I think it certain that the starch was not expected to add materially to the caloric value of the mixture, for its assimilation in any considerable amount was not counted on. Did it, however, have an unsuspected action?

More recently, E. Schloss, in reporting his experience with "whey-modified milk" in infant feeding, found that infants under 3 months of age made better progress when the mixture was made with flour. On another hand, although Keller felt that his malt-soup was less adapted for very young infants, Israel-Rosenthal and Oerum have found that by reducing the amount of malt-soup extract recommended by Keller, but maintaining or even increasing the amount of flour, it was admirably borne by young infants under 3 months of age.

Further clinical evidence on the usefulness of starch has, in the meantime, steadily piled up in hospital and out-patient practice in this country. This has been due to the manifestly greater toleration of many marasmic infants, and of others with disturbed digestions, for feeding mixtures made up with a thin barley gruel as the diluent, as compared with mixtures made with plain water and lime-water. Indeed, it has become almost unconsciously the custom to use barley water or other cereal as a diluent in the stock formulae of many of the infants' hospitals and milk dispensaries.

Since no such element as starch is indicated by the composition of breast-milk, which has so largely figured as our model in feeding infants, is it not about time to again ask ourselves seriously why cereal additions in the form of boiled, and therefore gelatinized, starch should have crept almost as a necessity into the final composition of such diversified types of feeding as diluted cows' milk, fat-free buttermilk, whey-modified milk, and malt-soup mixture? Why should boiled starch be added to all of these? Certainly, the starch must play some part to account for its use. Is this

part played similar in each diverse mixture? Chapin's theory of the influence of starch on the rennet coagulation of casein could not wholly account for it. Nor is it, primarily, to add caloric value; since, for example, that of the carbohydrates was already abundant in malt-soup.

It has always been characteristic of infant feeding to arrive at clinical results by empirical methods, and to find our scientific explanations later, even at the cost of upsetting carefully constructed theories. The experience with buttermilk, malt-soup, and even plain dilutions of cows' milk, pointed to the fact that when employed in disturbed conditions of the digestive tract they were better borne if gelatinized starch entered into their composition. From this, it would be a simple deduction that such boiled starch exerts some sort of protective action.

The next question which presents itself is whether this protective action is operative against the disturbing effects of one or more than one of the elements of our food mixtures or, of course, the products into which they may normally or abnormally be split during digestion. Keller's experience with the sugar of his malt-soup mixture seems to have clearly proved that boiled starch acts as a definite protection against the irritative effects of moderately large quantities of sugar. In further confirmation of this view may be cited the claim which I made recently, that dextrin, when present in large percentage, in maltose-dextrin preparations, exercises a similar protective action, and that this accounts in part for the relatively higher toleration of these saccharids as compared with cane-sugar and milk-sugar.

It will be recalled that dextrin, which is always present, though in different proportions, in all so-called "maltose" preparations, is closely allied to starch. It has many similar properties, being like starch, a poly-saccharid, a reversible protective colloid, and non-fermentable, and non-dialyzable. It is noteworthy that while the thick, semi-fluid, malt-preparations typified by malt-soup extract, have a low dextrin content of 10 to 15 per cent. and are laxative from their high content of maltose—requiring combination with boiled starch to overcome this drawback—on the other hand, such of the dry, powdered forms as contain a high percentage of dextrin—40 to 60 per cent.—have little or no laxative effect, and may, on the contrary, prove constipating.

Gelatinized starch also unquestionably acts as a protective against the undesirable effects of fat. This may be exerted on a high fat in breast milk—where the reduction of the fat cannot be readily accomplished—as well as in intolerance of the fat of cows' milk, where starch appears to have a curative action after the high fat has been reduced.

High fat in breast milk, during the early weeks of nursing, is one of the most prolific causes of gas, spitting-up, and loose mucoid stools with flaky curds. Many of these cases are the so-called "colicky" babies, whose mothers' milk is condemned as "poor" and the babies weaned, when with reasonable understanding of the condition and proper treatment they might readily continue at the breast. Such infants, already disturbed by the more readily digestible fat of breast milk, are not good subjects for the customary formulae of cows' milk commonly employed in bottle feeding, and weaning is liable to bring about a condition worse than the first. Complementary feedings, however, of some starchy gruel, are most useful in these nursing infants for overcoming the bad effects

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of the high fat percentage, not only when given so as to dilute the breast milk, but occasionally also, as I have knowledge, when the gruel is given by itself only once or twice a day.

In view of the proven mitigating action of boiled starch on the disturbances caused by over-fat breast milk, it seems to be a reasonable deduction that the favorable effects and toleration of both malt-soup and buttermilk on infants previously disturbed by the fat of cows' milk, have been due not only to the reduced amounts of such fat as they contain, but also to the presence of the starch which affects favorably the previously irritated small intestine and prepares the way for a more orderly resumption of its functions.

This brings us to a consideration of the extended use of barley water and other cereal decoctions for marasmic infants and others suffering from varying grades of digestive disturbance. In these, intestinal disorder is usually attested by the stools, and it is logical that here also the use of a starchy decoction, even though coincident with the correction of some serious error, in the composition of the feeding mixture, should play a part in the improvement of digestive conditions. I am therefore of the opinion that the use of a cereal diluent for cows' milk, as advocated by Chapin, not only influences the curd-formation and stomachic digestion, but, further, may act as a prophylactic or curative agent for disturbances of intestinal digestion. This salutary action might, at times, be favored by the use of his dextrinized gruel, which substitutes dextrin for the starch, and the more readily absorbable maltose for other sugar.

However unnecessary and inapplicable the majority of the so-called infant foods may be for the continuous feeding of normal infants with undisturbed digestions, it must be admitted that some of them, when used intelligently, are useful for temporary employment in disturbances of digestion. It is probable that the success of some of these containing starch or dextrin, is chiefly referable to this factor.

There seems, however, to be more than one way in which the giving of starch may influence digestive processes, and, indeed, from analogy, one would expect the matter to be complex. Since the digestion of carbohydrates proceeds most favorably in an alkaline medium, starch and dextrin, which less readily undergo acid fermentation than some of the sugars, may readily be conceived as more favorable to the maintenance of alkalinity and carbohydrate digestion. The value of this hypothesis is enhanced by the conclusion of Roger and Simon that the amylolytic action of saliva (ptyalin), although inhibited by the acidity of the stomach, is reactivated by pancreatic secretion in an alkaline medium, such as normally obtains in the duodenum. This undoubtedly increases the amylolytic power of intestinal digestion beyond our former conceptions.

Furthermore, Holsti has shown that a preponderance of carbohydrates in the food excites a prompt and long-continued secretion of pancreatic juice, which is the opposite of what obtains with fats. Combe, of Lausanne, has emphasized the usefulness of a starchy diet in the prevention of intestinal putrefaction. In view of the demonstrated success of starch additions, which, as we have seen, were practically compulsory in several of the most popular forms of emergency feeding, it may fairly be asked whether the slow conversion of starch may not be one of the vital factors in its usefulness? The more complex the form of car-

bohydrate the slower it is converted or broken down for absorption, and therefore the less opportunity is afforded at any given moment for fermentation (Stolte). While the practice of giving all the carbohydrates in the form of sugar frequently results in overtaxing the upper part of the small intestine, a slower conversion, as of starch, spreads the process of absorption over a greater length of intestine. These differences cannot be without influence in instances in which intestinal digestion has been disturbed.

Lusk has demonstrated that dextrose, given to dogs, raises the surface temperature, increases the volume of the blood, and definitely stimulates metabolism. Whether the ultimate splitting of starch into two molecules of dextrose, when this proceeds in the normal leisurely way, under the influence of the body enzymes, has a more favorable effect on the metabolism of the infant, must remain for the present a matter of conjecture.

Taking the above views into consideration, it is readily seen that the rôle played by starch in the intestinal digestion of infants may be a diversified one. Nevertheless a survey of the growing use of starch in infant feeding, forces the conclusion that whether its action is simple or complex, this action is in a broad sense protective, in that it allows the consumption of desired results, which with the same food, but in the absence of starch, are not obtainable. It would therefore appear that not only is starch tolerated and digested when given in moderation in the dietary of infants, but that it should be recognized as having a distinct field of usefulness in properly selected cases.

In this attempt to seek some rational explanation of the wide-spread use of cooked starch in the artificial feeding of infants, let us not confuse, as is so commonly done, the infant with a normal digestion and the infant with a disturbed digestion. In my experience, starch, as a rule, is unnecessary for the former before the seventh or eighth month. In the latter, however, it is often a remedial factor of great value. No sensible person would deny that relatively excessive amounts of starch have caused and always may cause, of themselves, disturbances of digestion, but instances of such abuse do not preclude its judicious employment.

In conclusion I may say that while it is an established fact that even young infants are prepared to digest moderate quantities of boiled starch, the indication for its use appears to lie in those suffering from disturbances of digestion and nutrition. With these, the chief end subserved by such addition to their food is not solely to nourish the infant, but to promote nutrition by making possible a more orderly digestion and absorption of its main nutriment, milk.*

807 Madison Avenue.

* This paper was discussed with a paper by Drs. F. N. Talbot and Lewis W. Hill, entitled, *The Metabolism of Carbohydrates with Special Reference to Its Effects on the Absorption of Fat and Nitrogen and on the Retention of Salts*. The latter paper appeared in the *American Journal of Diseases of Children* for September, 1914. Both papers and the discussion will be found in the *Transactions of the Section*.

Science and National Progress.—Pasteur was right when one day, exasperated by the politicians who were running his beloved France to ruin, he exclaimed: "In our century science is the soul of the prosperity of nations and the living source of all progress. Undoubtedly, the tiring daily discussions of politics seem to be our guide. Empty appearances! What really leads us forward are a few scientific discoveries and their application."—L. H. Baekeland, *Science*, Aug. 7, 1914.

PERCUSSION OF THE LUNGS

PART I. AN EFFORT TO STANDARDIZE THE DEGREES OF DULNESS

PART II. THE ADVANTAGES OVER THE OPPOSITE METHOD OF PERCUSSION FROM BASE TO APEX *

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PART I

While studying physical diagnosis as a student, one of the things difficult for me to understand was percussion. As I talk to students in the medical schools now, I am told by them that percussion is one of the hard things for them to learn and that it means the least to them of the physical signs. It has interested me to study why this is so, especially as I have come to regard percussion as a distinctly definite and valuable diagnostic means. This is so true that instead of correcting my dulness by what I learn from auscultation, as I once did, I now correct my auscultation by what I learn from percussion.

My studies have led me to recognize that the standards of clinicians for the various degrees of dulness, 1-2-3-4-line dulness—meaning respectively, impaired resonance, definite dulness, very marked dulness and flatness—are so individual, so lax and so diversified that they amount to no standard at all; certainly not a standard that can be grasped by an intelligent student. It is a common occurrence for a physician to percuss a chest which shows nothing but 2- or 3-line dulness, and to have him call the 2-line dulness normal resonance, and in consequence, call the 3-line dulness only 1. In this way serious pathologic conditions are overlooked. The following instance, which illustrates my point well, impressed me distinctly, as it was furnished by one of the leading hospitals of Boston and by one of the good instructors of physical diagnosis in the Harvard Medical School. This physician examined a well-built, muscular young man, a light-weight wrestler by trade, who had lost almost no weight, looked perfectly well and complained only of hoarseness. The examination, signed and written by the physician, stated that "the chest was normal throughout, lungs showed no disease." I examined the patient the next day at the Boston Consumptives Hospital and found 3- and 2-line dulness throughout both chests, and fine crackling râles with cough throughout. The larynx showed miliary tuberculosis and the sputum contained numerous tubercle bacilli. I think that the first clinician failed to recognize this very serious condition because he had no fixed standard of dulness.

In 1912 I began to study the pitch of the various notes of percussion in an effort to establish for myself some definite standard. I made a frequent practice, therefore, of whistling the pitch of the notes as I percussed the lungs. I soon learned that the variation between normal resonance and flatness was a range of over two octaves. This winter I have carried the investigation further. With an assistant, who has no medical training, I plotted out on the piano the notes

which corresponded to what I had come to consider my personal standard of 1-2-3-4-line dulness.

In each instance I took at least six patients and did not tell my assistant what note I expected to find. At first she hummed the note, found it on the piano; then we freed our minds of the notes by playing chords. I next hummed or whistled the note and she found that note on the piano. A comparison of our two notes showed that we never differed more than a half tone. Later we concluded that an easier and more accurate method was to strike middle C and then work up or down the scale until both of us agreed that the note on the piano corresponded with the percussion note.

In this way we examined six cases for each note. We also came back to the same case two or three times after examining others to determine how well we would agree with our former notes. When I percussed the same individual in the same place, we always agreed with our previous findings. Not only did we agree on the note previously found in a particular case, but the notes for the different degrees of dulness were the same in a variety of individuals. This proved that the problem was purely a matter of pitch and not one of individual variations.

I determined in this manner that normal resonance is F or F sharp below middle C; 1-line dulness A below middle C to middle C; 2-line dulness E flat to F above middle C; 3-line dulness B flat to intermediate C; 4-line dulness E to F above intermediate C. Thus it will be seen that there is an interval of an octave between normal resonance and 2-line dulness, and an interval of another octave between 2-line dulness and 4-line dulness or flatness.

Has this any practical value? Or is it simply an interesting thing theoretically and musically, requiring a specially trained ear to detect these changes of pitch? I think that it does not need a specially trained ear; that it is of distinct practical value and can be acquired readily by anyone who has had these differences pointed out to him. If it is not practical, then percussion as a physical sign is not practical. The discussion of this point, however, brings me to the second part of my paper.

PART II

To percuss well, the stroke on the pleximeter must be sharp and quick. A rapid recovery is essential. The motion may be best illustrated by saying that it should be made exactly as a woodpecker uses his head in boring a tree. All the motion should come in the wrist, and none in the arm. This secures a crisp note. The pleximeter may be held flat, or raised so that only the end of the finger touches the chest. In the latter position a distinctly smaller area is percussed at one time. The note, consequently, is less disguised by the surrounding normal or semi-normal tissue. It is essential, moreover, to remember in a disease like tuberculosis that normal lung is always in intimate contact with abnormal. This change from a flat to fingertip pleximeter does not alter the pitch of the pathological note. It only makes the note much more evident.

Of far greater importance than the proper manner in which to use the plexor and pleximeter, however, is the direction in which the chest is percussed. It should be percussed upward and not downward, from the base of the lungs to the apex and not from the apex to the base as has been taught so universally. This is so important that I wish to state my reasons for it carefully.

* Paper read before American Climatological and Clinical Association, Atlantic City, June 20, 1914.

A. It is much easier for the ear to pick up a higher note from a lower, than it is to do the reverse.

B. It requires a much lighter stroke to bring out the normal note than the pathologic.

C. It is the rational plan to work from the normal as a standard toward the pathologic. The reverse leads to faulty standards.

D. The apices, as is well known, are most frequently affected and more rarely give a normal note. To start at the apex, therefore, is usually to commence with a pathologic note. This prejudices the further examination. With downward percussion, the higher note merges into the lower too imperceptibly to do accurate work. This is so for two reasons; first, as I have already said, the mind becomes prejudiced in favor of a pathologic note and consequently does not attempt to make fine distinctions; secondly, a heavier stroke is required for the pathologic note and when the more resonant is reached, the percussion is continued too heavily to detect what should be readily appreciated differences in the force of stroke necessary to bring out a good note. In this way the examiner deprives himself of a very important guide to collect accurate data.

The best place, therefore, to start the percussion of the lungs is the left lower front, as this is most often normal. From there, work upward to the apex, and record the various notes without percussing the opposite side. Then percuss upward on the right side and finally from side to side and alter your first findings, if necessary. The comparative note between similar areas of the two lungs is often misleading, as both may be pathologic. This comparison, therefore, should only be used later to correct first impressions and to detect or confirm fine gradations. In doing the backs follow the same order, left lower to apex, right lower to apex, then from side to side. If this order is followed, I am sure that interesting observations will follow as regards the usual progress of a disease like tuberculosis, and the relative frequency between incipient cases and chronic ones of long standing with marked reparative ability.

I am absolutely convinced that a fine ear for percussion can be trained only by this upward method. I have been much impressed by the rapidity with which students appreciate the difference between the two modes and the readiness with which they acquire a standard of dulness as a result of it.

I said that I considered that a musical standard is practical and can be taught easily to the non-musical. I should like to prove that these statements are true. In the first place, I have had no difficulty in teaching such a standard to quite a wide range of students, good, fair and poor.

How then can this be taught the non-musical man? In the first place, the mind must be entirely freed from all preconceived ideas as to what pathologic process underlies the varying degrees of dulness; what stage of the disease is indicated and what bearing the dulness has on the prognosis. I am sure that I am correct when I say that many men to-day consider that 3-line dulness over all of both chests means a hopeless condition of the lungs. This very attitude of mind prevents them from making what should be an accurate scientific record of what they find. One of the chief reasons why I have so little difficulty with students is because their minds are open. I have several times been told by older men that the patient whom I was examining was too well to have such extensive dulness

as I claimed. I am convinced that, until a more uniform standard of dulness is adopted, we are in no position to discuss the pathology of 1-2-3-4-line dulness, when applied to such a disease as tuberculosis. At present such terms are as much of a hindrance as a help in the diagnosis and prognosis of chest cases.

In the second place, and in teaching students this occupies the first consideration, when resistance is felt under the pleximeter finger, the note is close to B below intermediate C or 3-line dulness. As we are all accustomed to this feeling of resistance under the finger when percussing, we have here not only an easy guide to any man, but also an accurate one. This observation depends on the muscle sense of the fingers of the physician and not on his ears. Until you feel this resistance, you have, therefore, to decide only between normal resonance and 2-line dulness.

Now the differences between normal resonance and 2-line dulness can be detected readily by the muscle sense also. Here, however, it is the muscle sense of the plexor rather than that of the pleximeter. There is a very definite difference between the gentle tap which is sufficient to bring out the normal note, and the decided stroke necessary to make the note of 2-line dulness loud enough to carry any distance at all. The physician who trains himself to start with very light percussion will quickly learn to appreciate these differences. That is why the examination should begin with that part of the chest which is most likely to be normal.

Although I have placed stress on the muscle sense of the pleximeter in detecting 3-line dulness, and on the plexor in detecting 2-line dulness, in both instances the muscle sense of both hands comes into play. As we measure the resistance under the pleximeter, we naturally measure the force of the plexor stroke. On the other hand, as we measure the lightness of the stroke of normal resonance in the plexor wrist, at the same time we measure the force of the stroke on the pleximeter. This, then, is as much a matter of training the muscle sense of the fingers and hands as it is of making use of a well-trained musical ear.

I wish to repeat, however, that one of the great barriers to acquiring this skill is the preconceived ideas which we have as to what the underlying pathologic condition must be for a given degree of dulness. I am free to confess that my physical examination occasionally makes it hard for some of my patients to enter the state sanatoriums. That is because more attention is attracted by my lines of dulness than by my report of symptoms.

CONCLUSIONS

1. Present methods of percussion are of little value, because, far from having any universal standard of dulness, there is not, in most instances, even an individual standard.

2. To a field in which there is no accurate standard, I bring some standard, to me one that is definite and easily acquired.

3. Normal resonance is F to F sharp below middle C; 1-line dulness, or impaired resonance, is A below middle C to middle C; 2-line dulness, or definite dulness, is E flat to F above middle C; 3-line dulness, or very marked dulness is B flat below intermediate C to intermediate C; 4-line dulness, or flatness is E to F above intermediate C.

4. No intelligent idea of diagnosis, prognosis, nor of the underlying pathologic condition can be formed by percussion without some such definite standard.

5. This standard can be acquired readily by the ear, and by the muscle sense of both hands, measured by the force of the plexor blow and the resistance under the pleximeter.

6. Upward percussion is an absolute essential of correct work. The old method of downward percussion should be discarded, and no longer taught to medical students.

PROGRESSIVE LENTICULAR DEGENERATION

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PHILADELPHIA

Although progressive lenticular degeneration, first described under that title by S. A. K. Wilson¹, is well established clinically, it has not often been encountered in this country. Since Wilson's first publication, in 1912, a number of cases have been recorded in foreign literature, but, with the exception of a case recently reported by Auer² and some brief references made before the neurological societies of New York and Philadelphia, little or nothing on the subject has appeared in American literature.

The patients whose histories are recorded here were admitted at different times to the wards of the Orthopaedic Hospital and Infirmary for Nervous Diseases, Philadelphia, and first came under the care of Dr. S. Weir Mitchell, and later passed to the service of Dr. John K. Mitchell. They have both been under observation for a considerable length of time. Examinations have been made repeatedly by various observers, and all the facts have been corroborated carefully from time to time.

CASE 1.—History.—B. R. H., man, aged 18. Patient's parents are healthy; a grandaunt was believed to have had myxedema; a first cousin and also an aunt had exophthalmic goiter. The patient was born at full term, the labor having been normal. He first walked and spoke at the usual age, and developed normally. He has never had convulsions or been otherwise ill. He was considered an unusually intelligent and attractive boy, always at the head of his class at school, and but for illness would have entered college at the early age of 14.

Present condition began when the patient was 14 years of age, while he was at boarding-school. The symptoms developed rather quickly, first manifesting themselves in the form of sluggish movements, indifferent table manners, a constant driveling of saliva, dysarthria and general lassitude. The condition continued for a number of weeks, and then the symptoms became more and more exaggerated. When first seen by his physician about six weeks after the onset, the patient appeared to be a driveling idiot, exhibiting general thickening of the skin and peculiar jerking movements of the extremities. A diagnosis of myxedema with multiple myoclonus was made, and thyroid extract administered. The mental improvement that followed was said to have been remarkable and almost immediate. Other symptoms attributed to the myxedema disappeared gradually in from one to three months, but the tremor became more pronounced. The thyroid medication was continued until the patient was 18 years of age. During the past two and a half years the patient's condition has remained stationary.

Physical Examination.—The facial expression is often quite vacant, especially striking being the more or less constant

smile he wears. His complexion is dark and his hair is black; the skin is not thickened and in no way does it suggest a myxedematous change. Patient states that his complexion was always dark.

The pupils are equal in size and react normally to light, accommodation and convergence. The optic disks are normal, and the ocular movements are performed regularly; there is no nystagmus. When the patient winks, the eyelids occasionally remain closed and the lids cannot be elevated voluntarily without assistance. This appears to be due to a tonic spasm or contracture of the muscles of the eyelid. The mouth is not held open continually, but gapes more often than in most normal persons. The flow of saliva is not increased. The movements of the lower jaw, the tongue and the muscles of the pharynx and larynx are all performed with normal power. Laryngoscopic examination showed that the movements of the vocal cords were quite good, but somewhat slow. The hearing is normal. There is no difficulty in swallowing either liquids or solids. The voice is high pitched and has a nasal quality, and dysarthria is pronounced, being characterized by the slurring of syllables and the cutting off of the ends of words; the speech is quite different, however, from that of multiple sclerosis, in that the scanning tendency is lacking.

The movements of the facial muscles suggest a condition of spasticity. When tested by the customary methods, each of the cranial nerves appears to be normal. The thyroid gland is not enlarged, and the superficial lymph-glands likewise present no evidences of enlargement.

The left sternomastoid muscle is in a state of extreme hypertonicity, in consequence of which the head is often turned to the right; this is not, however, constant. The head can be rotated freely, but the rotation is accompanied by a fine tremor.

The musculature of the entire body and extremities appears to be good, but there is little subcutaneous fat, so that the outline of each muscle is well defined; nevertheless the patient does not appear to be emaciated. The skin everywhere is of a copperish-yellow hue, and a few small pigmented moles are scattered over the body. The most striking features are marked tremors, rigidity and a tendency to contractures, all of which are never absent, although they vary in intensity.

The upper extremities are in a state of almost continuous clonic tremor, more marked distally than proximally, and somewhat more exaggerated on the right side. The excursion of movements is wide, and the rate is rapid, but variable. On the slightest excitement or on exertion the tremor becomes violent. On attempting to place the palm of one hand against the cheek the hand strikes the face forcibly in a rapid succession of rhythmic flexor and extensor movements. A similar tremor of the lower extremities occurs while the patient lies in bed and on attempting voluntary movement of the trunk; it is also present when he is in the sitting and the standing positions. On starting to walk and in turning, one foot, generally the right, is thrown into a series of rapid clonic movements, the foot tapping the floor violently. When an effort, however, slight, is made to restrain the muscular movements, the tremor shows a decided tendency to involve the musculature of the entire body. At times, when the patient is standing quietly with his hands hanging at his sides, or when weights are placed in his hands, the tremor may disappear almost entirely for a few moments. The muscles of the entire body are in a state of more or less hypertonicity. The left foot is frequently in a condition of extensor spasm, assuming the equinovarus position, with the large toe flexed dorsally. On standing or in starting to walk there is often overextension of the trunk, and consequently a tendency to fall backward; equilibrium can be regained, however, by muscular effort. In this it differs from the uncertainty of ataxia, and appears to be due to muscular rigidity.

The abdominal muscles are tense and fixed, and the abdominal reflexes are equal and otherwise normal. Voluntary movements, such as are made in walking, are "wooden" and "mechanical" in character, and lack the smoothness that characterizes the working of a well-oiled machine, to which

1. Wilson, S. A. K.: *Brain*, March, 1912.
2. Auer: *Am. Jour. Nerv. and Ment. Dis.*, June, 1914.

the normal body movements may be likened. Because of rigidity all voluntary movements are greatly retarded, yet the patient can perform flexion and extension of all joints, as well as adduction and abduction. Walking and rising from the sitting and prone position can be accomplished without assistance, but not, however, without considerable voluntary effort on the patient's part. The muscular power is unimpaired and does not differ in the extremities of the two sides, as estimated from the resistance exerted by the examiner. There is no paralysis present. With the exception of the incomplete contractures of the peroneal muscles of the left leg, the left sternomastoid and the elevators of the eyelids, previously mentioned, actual permanent contractures are absent.

Pain is never present, nor can any sensory change be discovered. The sensations, as tested for touch, heat, cold and pain, are everywhere normal.

The tendon and the cremasteric reflexes are all equal and entirely normal; they are active, but not exaggerated. There is no ankle-clonus, and no Babinski reflex is present. Owing to rigidity, overextension of the great toe sometimes occurs, and this could be mistaken for the Babinski sign.

Examination of the thoracic and abdominal organs reveals no abnormalities; the liver dulness is not diminished and appears to be normal. The systolic blood-pressure is 118. The electric examination gave entirely normal reactions. The blood and urinary examinations were negative, and there was no evidence of bile-pigment or other abnormalities in the urine.

The mental condition of the patient was fairly good; he was intelligent, although he lacked the power to concentrate, and was distinctly foolish and inclined to be childish, but apart from this nothing characteristic could be discovered.

CASE 2.—History.—W. P., man, aged 36. Father is healthy; mother has had intermittent attacks of melancholia; one brother is well; one older sister and two brothers are afflicted with a condition similar to that presented by this patient, namely, tremors, spasticity and contractures of the muscles, which began in youth. This statement has been corroborated, but personal examination was not made. One of these brothers is mentally deranged, and displays outbursts of temper and other manifestations of disordered mentality. The other brother and sister are normal mentally.

This patient, as well as the other affected members of his family, was born at full term and developed normally. The present condition began in 1892, when the patient was 16 years old. The tremor at first affected the right side, the muscular rigidity and spasticity gradually increasing and spreading to the muscles of the neck, causing tremor of the head, and later involving the entire body and all the extremities. The patient was first seen in 1900, and has remained under observation ever since. He now presents a condition characterized by constant involuntary movements, the tremor increasing with emotional disturbances and voluntary effort, but not disappearing when he is at rest. The tremor is fairly regular, of the type which manifests itself by flexions and contractions, involving almost every group of muscles in the body; dysarthria is pronounced, but his speech is not marked by scanning.

Spasticity and rigidity of the muscles, as well as contractures are pronounced. The contractures are not permanent, however, except that affecting the larger muscles of the lumbar region, which causes the trunk to be bent to one side.

His physical inability seems to be due entirely to tremor, rigidity and apparent incoordination, and not to paralysis. All the tendon reflexes are slightly exaggerated, but equal. The skin-reflexes are normal. The Babinski sign is absent. Mentality is and always has been normal.

The disease was progressive at first, but five or six years after its onset it became stationary. Further examination shows nothing abnormal. The eyes present no abnormalities; there is no nystagmus, and sensation is normal. Both Wassermann and Noguchi reactions are negative. All thoracic and abdominal organs are normal, and there are no parasthesias; the sphincters functionate properly, and there is no ataxia or pain. The liver dulness is not diminished,

and the patient asserts that he feels well. Electric examinations gave negative findings, and the urinary examination was also negative.

The clinical picture presented by these two patients differed but slightly, this difference being more particularly one of degree than of character. The two cases appeared to be of the same type. In Case 2 the disease seems to have commenced gradually, assuming a chronic nature from the beginning, but evincing no constitutional symptoms, the tremor having been the first visible evidence of the disease. This onset is similar to the one described by Wilson as chronic. In Case 1 the onset seems to have been acute, and the symptoms were regarded as myxedematous; after some weeks, however, these symptoms all subsided, but the tremor, rigidity and tendency to muscular contracture remained. The patient's mentality was impaired, and he displayed a tendency toward childishness. From the family history, and owing to the fact that the acute symptoms disappeared while thyroid extract was being administered, it might be assumed that some disturbance of the ductless glands was the etiologic factor; whether the acute symptoms merely subsided, as they always do in the beginning, or whether they really disappeared as the result of the thyroid treatment, is, indeed, questionable.

In neither case was there any clinical evidence of the presence of hepatic disease. The liver dulness was neither diminished nor increased in either case. The urine of both patients showed no abnormal characteristics, bile-pigment and the like being absent. The first patient did, however, exhibit a peculiar yellowish color of the skin, different from that of jaundice. This discoloration is undoubtedly similar to that described by Fleischer³ and Rumpell.⁴ Volsch's⁵ (1911) patient also showed pigmentation of the cornea, a finding that was absent in my case.

The significance of corneal pigmentations when associated with tremor is still very uncertain, particularly when these are accompanied by skin changes and evidences of hepatic disease. This subject has recently been carefully studied by Holloway.⁶ The first patient presented a very curious condition, in that he was unable to open his eyelids without assistance. In referring to this in his history it was spoken of as a form of contracture. I have never observed anything quite like it, and if it is part of the picture of lenticular degeneration, this manifestation has not previously been reported. At times when both eyes would be closed naturally the eyelids would remain closed and could not be opened voluntarily; when, however, the patient placed his index-finger on one orbital ridge and pushed upward, both lids could be elevated and the eyes remained open. This condition was markedly aggravated by any emotional disturbance, although the latter did not appear to produce the condition.

A relationship seems to exist between the disease known as progressive lenticular degeneration and the condition named by Westphal pseudosclerosis, the two diseases having some points of similarity. In December, 1912, I presented the patient here described as Case 2 before the Philadelphia Neurological Society as a case of pseudosclerosis, and called attention at the time to the possibility of the existence of lenticular

3. Fleischer: Deutsch. Ztschr. f. Nervenhe., 1912, xliv, 179.

4. Rumpell: Deutsch. Ztschr. f. Nervenhe., 1913, xlix, 54.

5. Volsch: Deutsch. Ztschr. f. Nervenhe., 1911, xlii, 335.

6. Holloway: Am. Jour. Med. Sc., August, 1914, p. 235.

disease. Since then Strumpell⁷ has reported a similar case, drawing attention to the similarity or relationship of these two curious clinical pictures. Westphal⁸ himself has reported a case of pseudosclerosis with necropsy findings. He was able to discover distinct changes in the nervous system, chiefly of the glia nuclei, and more especially in the gray substance of the large ganglia of the cerebrum, and also in the dentate nucleus of the cerebellum. The nuclei of the ganglia-cells were enlarged, altered in shape, and were deficient in chromatin substance. In addition, the liver was distinctly reduced in size and presented a cirrhotic appearance. In reporting this case Westphal calls particular attention to the relationship that pseudosclerosis seems to bear to this peculiar morbid process, characterized by pigmentation of the skin, cirrhosis of the liver, tremors and mental and nervous phenomena. It is my belief that the first case here recorded might belong to this group.

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THE PRESENT STATUS OF ORGANIC IODIN PREPARATIONS*

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The flood of organic preparations of the various metals introduced into therapeutics during the past few years has carried with it a considerable number of organic preparations of the non-metallic elements, chiefly the iodids and bromids. The advantages of these preparations over the older inorganic combinations have in general not been carefully considered by the makers or users, but the popularity earned by the organic preparations of arsenic and mercury has led manufacturers to seek new fields of endeavor. In a previous communication¹ I reviewed the evidence regarding the various organic iodine preparations on the market. Since that time some new evidence has been brought forward, and a summary of our knowledge at the present time seems desirable.

The larger number of commercial preparations resolve themselves naturally into two classes: (1) iodine products of the higher fats or fatty acids and (2) iodized albumins. These two classes are so dissimilar that they must be considered separately.

The chief iodized fats and fatty acids on the market at the present time are Iodipin (Merck), Sajodin (Farbenfabriken von Elberfeld), and Iodival (Knoll & Co.) These substances are products of the addition of iodine to the higher fats or fatty acids or their derivatives, and contain varying amounts of iodine. They are sufficiently similar in their characteristics to allow of their being considered together. The advantages over the alkaline iodids claimed by the manufacturers are chiefly as follows: (1) absence of gastro-intestinal irritation, (2) slower absorption, (3) longer retention in the body and a more uniform rate of excretion, and (4) less tendency to produce iodism. The first claim is in general well substantiated, as all of these sub-

stances are bland and unirritating, the iodine being so firmly bound in the molecule as to be inactive locally. These substances are in general absorbed without much change in their composition, the absorption being similar to that of fatty acids, and much slower than that of the alkaline iodids. While 75 per cent. of the iodine given in the form of potassium iodid is excreted in the urine within twelve hours, and the highest amount in the urine is in the second hour, the absorption and elimination of the iodized fats is much slower. When Sajodin is given, iodine does not appear in the urine until after from one to three hours, and while the highest point in the excretion is reached within twelve hours the amount excreted remains high for thirty-six hours, giving a much more uniform rate of excretion. Following absorption, as shown by me,² the iodized fats are carried to the various parts of the body and deposited at least in part in the fatty or lipid constituents of the cells, this agreeing with the theory of "lipotropie" advanced by Loeb. On this account the central nervous system, being rich in lipoids, is found to contain relatively much more iodine following the administration of an iodized fatty acid than after potassium iodid. After being stored in the lipoids of the cells these substances may, as suggested by Meyer and Gottlieb,³ give off free iodine when the proper conditions are present. These facts explain the longer retention in the body and the slower excretion of iodine following the administration of these preparations. The iodine is excreted in inorganic form, and probably is effective in the body only after it is separated from the organic molecule. Its action and fate after separation from the organic combination would naturally be the same as if an alkaline iodid had been administered, and the only advantage gained would be in its being held and liberated more slowly, as no one of these preparations has been shown to possess a specific action beyond that of the iodine which it liberates. The fact that relatively more iodine is found in the nervous tissues probably has little bearing on the efficiency of these substances in cerebral syphilis, etc., as their lipid solubility would not favor their entrance into syphilitic tissue. The lessened tendency to iodism claimed by many observers may be explained by the retention of the iodine in the lipoids and its slower and more uniform release in the form of available iodine. According to our present ideas iodism may be dependent on a high concentration of easily available iodine in the tissues. A high concentration may be reached for a short time by a relatively small dose of potassium iodid, but in the case of an iodized fat there is never this sudden flooding of available iodine. Where continuous small amounts of iodine are desired, as in arteriosclerosis, bronchial asthma, lead-poisoning, etc., this iodine may be supplied in a form non-irritant to the stomach as an iodized fat or fatty acid, and the probability of iodism would not be great. The iodized fats and fatty acids may be compared to the organic combinations of arsenic and mercury, in that they seem to allow to a certain extent the maximum of therapeutic effect with the minimum of toxic effect. When large amounts of iodine are desirable, however, as in cerebral syphilis, etc., the therapeutic effect seems to depend on the same property that causes the toxic effect, that is, the high concentration of iodine, and any effort to

7. Strumpell: *Deutsch. Arch. f. Nervenhe.*, 1914, 1, 455.

8. Westphal: *Arch. f. Psychiat. u. Nervenkr.*, 1913, li, 1.

* From the Department of Pharmacology, Medical Department, University of Oregon.

* Investigation supported in part by a grant from the Therapeutic Research Committee, Council on Pharmacy and Chemistry, American Medical Association.

1. McLean, Franklin C.: *Organic Iodine Preparations*, their Pharmacology and Therapeutic Value, *Arch. Int. Med.*, November, 1912, p. 505.

2. McLean, F. C.: *The Distribution of Iodine in the Cell Following Administration of Organic Iodine Preparations*, *Arch. Int. Med.*, to be published.

3. Meyer and Gottlieb: *Pharmacologie*, Berlin, 1911, p. 358.

decrease the concentration would result in a sacrifice of therapeutic efficiency.

The iodized albumins on the market are chiefly Iodalbin (P. D. & Co.) and Iodo-casein (Mulford). They are relatively unstable, and Iodalbin contains some free iodine and much more easily available iodine. Its claim for classification as an organic preparation is thus only partially borne out. As would be expected from the availability of its iodine, iodine appears in the urine within a few minutes after its administration. As I have shown² it completely loses its identity during the process of digestion and absorption, and its iodine is not found in the body in combination with protein. Any advantage of these preparations over the soluble inorganic iodides must lie in their behavior in the gastrointestinal tract. In this way they resemble the organic iron preparations, most of which are protein in nature.

It has been repeatedly demonstrated that the iron preparations are not absorbed until after digestion and that their only advantage over the inorganic preparations lies in their better tolerance by the gastrointestinal tract. In the case of iodized albumins there may be a somewhat slower absorption, owing to the time required for digestion, but their action and fate following absorption is practically that of soluble inorganic iodides.

Iothion (Farbenfabriken von Elberfeld Company) must be given a separate classification. It is chemically di-iodo-hydroxypropane, obtained by chlorinating glycerin and replacing the chlorine by iodine. It is recommended for local application and for percutaneous administration in solution in olive oil, and rapid absorption is claimed. It is apparently efficient in case percutaneous administration is desirable.

Another class of preparations, the iodized tannins, scarcely deserve classification as organic preparations. They are prepared in the form of wines or sirups, and contain tannin with a small amount of loosely combined iodine. The action of the small amount of iodine they contain is the same as the action of a corresponding amount of potassium iodide, as they decompose rapidly in the stomach.

The conclusions to be derived regarding the organic iodine preparations designed for general iodine medication are as follows:

1. So far as we now know these preparations have no specific action beyond the action of iodine after separation from the molecule.

2. The iodized fats and fatty acids, when small amounts of iodine are desired, seem to combine the maximum of therapeutic effect with the minimum of toxicity, chiefly because of their retention in the body and the slower release of the iodine. They are not of advantage when a high concentration of available iodine in the tissues is desirable.

3. The iodized proteins may be of some advantage in so far as they prevent gastric irritation and retard absorption of the iodine. Their behavior after absorption is the same as that of the soluble inorganic iodides.

4. Iothion and Iothion Oil are available for percutaneous administration, when that is desirable.

5. The sirups and wines of the so-called iodized tannins display no advantage over the soluble inorganic iodides.

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INJURIOUS EFFECTS OF FORCIBLE PASSIVE MOTION IN DISEASED AND TRAUMATIC JOINTS*

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The terms "passive motion," "massage" and "Swedish movement" are, to say the least, very confusing in their application, they are used in such an indiscriminate way, in books of surgery, essays, monographs, clinical lectures and by the general profession. In many instances these treatments are advised regardless of the anatomic and pathologic conditions of the joints involved.

Passive motion is a different treatment from massage or Swedish movements, but all three treatments are many times suggested in such a perfunctory manner that one might regard them as the same, and the results are disastrous, especially in inflamed joints and in many forms of infected joints, as well as injuries, fractures and dislocations at or near the joints, and seldom if ever is any good accomplished in establishing normal motion. Passive motion should be abandoned in joint diseases. Personally I do not recall a case in which it has been beneficial so far as motion is concerned, by the use of forcible passive motion, *per se*.

The fact that I have advocated, pleaded and almost begged for protection and rest for inflamed joints, with Minnesota physicians, and that the opposite treatment quite frequently is practiced by the regular profession and the general surgeon, leads me to think that these recommendations are either too feeble, or not well founded. Whether or not the latter is true, will, I hope, be decided in the discussion which may follow this short paper.

Frequently too, my stiff joint patients consult medical men in New York, Boston, Philadelphia and Chicago, and return with a very courteous letter to me advising passive motion, or that the adhesions be "broken up," and this followed by forcible passive motion. Such advice, however, has never come from a strictly orthopedic surgeon. This leads me to feel that possibly the Eastern orthopedic men have similar trouble in instructing and keeping the general practitioner and the general surgeon from assaulting these unprotected inflamed and stiffened joints by forcible passive motion.

At Asheville, N. C., the past winter, a patient from Boston with stiffened and painful joints was being treated under his home doctor by passive motion. The child's nose was filled with adenoids, and his tonsils were so large that he could not speak plainly. This experience was some consolation to me, as he certainly came from a city in which he could have received much better advice, and did, but his physician failed to listen or read.

As a teacher, as a consultant, and by patients, I am sure I am asked this question more frequently than any other: "When should forcible motion be commenced in a joint in order to establish the natural movements?" The answer is, "Never forcible passive motion under an anesthetic or even active motion when it causes pain." There is always a look of surprise,

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or an expression by word or letter, showing that the interrogator believes the answer cannot possibly be based on good mechanical reasons. They forget that the human joints are the highest form of mechanical contrivance, so far as action, pulleys, leverage, etc., are concerned, and unlike any manufactured mechanism in their ability to repair and self lubricate, and that human mechanism never becomes rusty or wears out; some disease or injury must occur to destroy joint motion, and in order to restore motion, this disease or mechanical obstruction must be overcome before motion should be attempted either by force or otherwise.

When the orthopedic surgeon advises against passive motion to establish permanent motion, one's mind immediately turns to manufactured joints, gummed wheels and rusted hinges, wear, lack of lubrication and their exposure to weather producing this stiffened condition, which never prevails in persons, and they do not appreciate that Nature's "first aid" to the injured or inflamed joint is neuromuscular spasm. If inflammation is not checked by rest and constitutional treatment, or both, a stiffened joint will result, and the adhesions and inflammation would be distinctly increased by motion, and would finally result in bony ankylosis.

To this day few medical men, except orthopedists, recognize the great benefit derived from immobilizing dressings in so-called acute rheumatism or infected joints from whatever cause, with the possible exception of tuberculous joints. Even in tuberculous joints they do not do so, I fear, from reason, or they would apply the same protection to every inflamed joint, from whatever cause, but rather from clinical facts gleaned from books and the constant warning and teaching of their orthopedic professor; nor would they be constantly asking when to begin passive motion in a tuberculous joint.

We who treat these cases daily are quite pleased with a cure in a tuberculous joint with motion; but would we not all feel more secure with a cured tuberculous joint with the limb in good position and the joint immobile? I myself never advise passive motion, nor do I advise the patient to use forced motion in a cured tuberculous joint, no matter how many years the joint has been free from any evidence of disease. In former years I have been guilty of advising patients in a mild way themselves to increase motion gradually by using a little force after I felt that the disease was entirely eliminated; but in many instances inflammation was lighted up again, abscesses formed, or the disease appeared in other parts of the body, even after every evidence of inflammation in the joint had disappeared many years before.

Certainly there are many neglected deformed tuberculous joints which can be straightened only by force. I refer to joints after the inflammation has so far subsided and they are held in the deformed position by contracted tendons and inflammatory adhesions. Even in these I almost never use force until I have attempted to overcome the deformity by rest, combined with extension, or, if I find that under an anesthetic there is motion, I frequently allow the patient to come out from under the anesthetic and complete the correction by rest and extension. While this takes a much longer time, the results compensate for the time and there is less likelihood of abscesses or disseminated tuberculosis. In our state cases, in which we have no time limit in the hospital, we have thoroughly tried this out, and we are convinced that we have gained time in this

way rather than otherwise. So enthusiastic are we that many times in old flexed hips from tuberculosis, even though by using considerable force under ether we could overcome the flexion, if we feel that the adhesions are sufficient to prevent its flexing further we have done a subtrochanteric osteotomy rather than use force.

I have, even in chronically flexed thighs with slight motion and no pain, advised no mechanical treatment until the hip was fixed, in order later to perform a Gant's operation. This advice was given in cases of adults and when the patient could not spare the time longer for mechanical treatment.

In inflammatory stiffened joints, from any cause, passive motion is contra-indicated. The so-called stiff joints from arthritis deformans, in chronic, acute and subacute cases, respond to rest and extension, combined with constitutional and local treatment, better than from passive or active motion, until all pain has disappeared. Then if there is a little motion the patient is instructed very positively not to force motion beyond the point of pain.

It is surprising, as stated above, since these facts are so generally known, that in text-books of general medicine and surgery so little attention is paid to the importance of holding all acutely inflamed joints quiet by cast, brace or splints. I have not seen any form of acute inflammation of a joint, even gonorrheal, result in ankylosis, if immobilization by means of a splint, cast or extension be continually applied during the early and painful period, unless the joint disease was suppurative. Certainly even in suppurative cases they are much less likely to be stiff if immobilized after opening and draining, both of which we know are always indicated when pus is present, but never passive motion.

One cannot always ascertain by roentgenoscopy how firm are the bony ankylosis or fibrous adhesions. Frequently when the subject is chloroformed, gentle flexion and extension will demonstrate motion. If it gives without much apparent tearing of the tissue, one should stop before completing the full arc of motion. The joint should not be worked by moving the distal end back and forth like a pump handle, for every such motion increases the inflammation, and tears adhesions, which would otherwise stretch by extension and limited use.

We are constantly hearing and reading about gentle passive motion in sprains. On what theory this advice is based it is hard to conceive by those of us who are constantly being called to treat the injurious effects of such procedures. Certainly we know that a sprained joint can be immobilized too long, but we also know that there is an acute stage even in a simple sprain when rest is the treatment, and especially is this true, as the sprain is accompanied always by a stretching of the tendons, capsules and ligaments and more or less synovitis; and many times, and perhaps always, there is not only stretching, but also rupturing and tearing of the structures mentioned above. How often do we see in sprains of the shoulder, after a few days at most, passive motion begun, and later, as the shoulder becomes more and more painfully stiff, forcible passive motion under an anesthetic, "to break up the adhesions," until the patient himself discovers, as he states, that the shoulder is getting worse and more stiff after each manipulation?

Probably the greatest destruction of joint tissue occurs in fractures in and about the elbow joint, wrist

joint, and the ankle joint, by attempting to improve motion and deformity by passive motion.

Many surgeons seem to think that if they place a fractured elbow in a straight splint, with elbow in full extension, or full flexion, or the old-fashioned way of partial flexion, that this is all that is necessary. Any fracture anywhere in the body should be examined by Roentgen ray after the splints are applied, to see that all of the fragments are in anatomically correct positions. If this is done the joint will never require further treatment other than use to develop motion, except possibly now and then in nervous cases, and then only just a start, but never passive motion. Even in cases in which bony deformity in the elbow prevents full flexion and extension full use of the arm is often developed in a year or two by active motion.

I recall such a fracture in a young boy about 9 years old, son of an army officer. The father was very much exercised over the matter as he wished to have his son go to West Point, and later enter the army. This could not be if the boy did not have full use of his right elbow. The injury had occurred about six months previous to the time of my examination. Two months previously the attending surgeon began passive motion both with and without narcosis, and the father was instructed to work the arm back and forth three times a day regardless of the boy's protest. Naturally, when I saw it the elbow was intensely swollen and painful, so much so that the bony position could not be made out. A cast was applied, and instructions given to carry the arm in a sling. At the end of two weeks the cast was removed, and the tenderness and swelling had so far subsided that it was easily demonstrated that a portion of the inner condyle of the humerus was in front of the joint. But there was also, to our surprise, some motion. I advised an operation either to replace the fragment or remove it, to which the father objected, as it moved better than it did before the dressing was applied. He continued to object as the boy continued to improve, simply by active motion, and no attempt whatever, either by the boy or any one else, was made to force it. At the end of two years he had perfect motion in every direction, which he would not have had, I am sure, if the passive motion had been continued, and possibly not if he had been operated on.

Numerous similar experiences have led me to give the following advice in all cases of injured joints in children, where there is a little motion: "Keep the joint quiet until all pain and inflammation have disappeared, and then just use it naturally, flexing and extending up to the point of pain." Since following this procedure, out of a great number of children only two required operation, as the joint motion in all other cases was so nearly perfect that it was unnecessary.

I feel that by the "let alone" treatment in such cases, the inflammation of the joint subsides, the inflammatory thickening disappears, the callus lessens, and the fragments or displaced bones in the children do not increase in proportion to the growth of the joint. This, together with the compensatory changes in the joint, and, most of all, no passive motion to combat Nature's healing, is the reason for these finally good functional elbows.

Fractures near the wrist joint, usually designated as Colles' fractures, furnish the most marked ill effects of passive motion, and naturally too, as our text-books on surgery are filled with advice as to

when to begin passive motion, not massage or actively moving the fingers, but passive motion to the joint. This increases the irritation, the callus, the inflammation and certainly the tendon adhesions.

When the dressing is removed there always appears marked swelling and edema in fractures about the joint, and the patient, if he can endure the pain, must submit to passive motion, or have it done under anesthesia, which continues the swelling and inflammation. Sometimes the bones, too, are in bad position. Of late, since the Roentgen ray is so universally used, this complication is quite uncommon. In most of these wrist fractures, after the splints are removed, if a simple bandage were applied to immobilize, to a limited extent, and active motion only to the point of pain allowed, the patients would, without assistance, obtain good and painless motion.

In fractures in and about the ankle joint, and in any form of inflammation here, for that matter, we get the greatest interference with motion from the contraction of the Achilles tendon owing to the foot naturally dropping in this position, or, I regret to say, frequently being dressed in the position of equinus which, unless one is very mindful, will occur. This tendon is so very strong that in cases of stiffening following an improperly dressed fracture or inflammation, I prefer, if necessary, to divide the tendon to place the foot at a right angle, rather than do so by extensive force, as it will always be followed by more or less trauma to the joint.

In chronic rigid flat-foot, with the foot in the position of pronation, and the heel cord shortened, the better and quicker result will follow if, instead of forcibly correcting the deformity by manipulation, we tenotomize all contracted tendons, and then immobilize in the overcorrected position, and after the inflammation has disappeared, proceed with the usual mechanical protection.

After fractures of the patella, if there is slight motion in the knee-joint, give the patient a chance and he will gradually loosen the joint. In several instances the patella has again been fractured by forcible passive motion.

If a joint requires loosening, or bony adhesions take place, motion should be stopped just as soon as it is loosened, and no attempt should be made to complete flexion and extension. This should be followed by the usual orthopedic treatment for an inflamed joint. Then the patient should be instructed gradually to begin using the joint, as the irritation disappears, which will be indicated by the lack of swelling and the disappearance of pain.

I have not mentioned in this article other forms of treatment which might be employed to loosen joints and reduce inflammation; neither do I wish to condemn open operations to remove or fix misplaced bony fragments, when indicated, though too much of it is done, which could be accomplished mechanically.

I have tried to demonstrate that so-called passive motion to loosen joints, as a treatment, *per se*, is injurious. Hippocrates must have had this in mind when he said, "Hard rubbing binds."

The Moral Equivalent of War.—The martial type of character can be bred without war. Strenuous honor and disinterestedness abound elsewhere. Priests and medical men are in a fashion educated to it, and we should all feel some degree of it imperative if we were conscious of our work as an obligatory service to the state.—William James, *Popular Science Monthly*.

THE DETERMINATION OF THE NEXT DOSE IN TUBERCULIN THERAPY*

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In the determination of the appropriate dose for the individual patient lie both the difficulty and the danger of tuberculin therapy. A dose in excess of the exact amount required frequently proves disastrous and has even hastened death. The possibilities of giving the wrong dose are increased by the very wide limits of tuberculin dosage, one patient requiring a dose one thousand or one million times that required by another patient, who is sometimes apparently of the same type.

There is no way of determining accurately the proper dose for a patient who has never taken tuberculin. The initial dose is always a matter of guess. Experience and judgment may indeed help one to guess more correctly, but they do not insure accuracy. White and Williams estimate the initial dose from the size of the areola produced by a von Pirquet test made with a definite amount of tuberculin; but they use this method only for incipient afebrile cases and the dosage they use I would be afraid to employ. My own rule with regard to the incipient dose is to give an amount that will probably do no harm. When beginning tuberculin treatment, therefore, I give, in incipient cases, one ten-millionth to one millionth of a milligram; in moderately advanced cases one billionth to one one-hundred-millionth of a milligram, and in far-advanced cases one trillionth to one billionth of a milligram. My reasons for giving this dosage I have explained at length in a previous communication.¹

The dose for a patient who has already been given tuberculin, however, should not be determined by guess, but by careful estimation. It is here that judgment and experience count. From the effect produced by the last dose of tuberculin we can determine the amount to be given at the next dose. The dosage must be distinctly individual. It is impossible to generalize in tuberculin therapy or even to group our cases. There is no rule of thumb to guide us, nor any general plan of approximate dosage. We must study critically in each individual patient the phenomena that have followed the previous administrations of tuberculin, and from the data presented decide what the next dose in that case should be.

In order to pass an intelligent judgment it is important to have a clear idea as to the effect one desires from the use of tuberculin. There are really three methods of giving tuberculin. Sahli, Denys, and most of the German authorities, as well as Trudeau and his associates in this country, desire to accustom the patient gradually to large doses of tuberculin without causing any reaction in the process. Others, such as Koch, C. Spengler, Petruschky, Löwenstein, Möller and Pickert abroad, and White in this country, endeavor to give the dose that will just produce a slight reaction. The English school, including Latham and Inman, and Bullock and others in this country, aim to give the dose that has a favorable influence on the symptoms and to maintain this dose until it loses its effect. I am in thorough accord with this third group and partially agree and partially disagree with

the other two groups. This becomes possible if we distinguish between favorable and unfavorable reactions. I regard as signs of a favorable reaction: improvement in appetite, increase of strength, a feeling of well-being, lessening of the symptoms, flattening of the temperature curve, and all favorable phenomena occurring on the day tuberculin is given or on the day following. An unfavorable reaction is shown by weakness, fatigue, drowsiness, headache, malaise, anorexia and increase of the various symptoms on the day of or on the day after tuberculin treatment. I try to give the dose that will produce a favorable reaction—which is really the object sought by Latham and his school. At the same time I half agree with those who desire to produce a reaction, only the reaction I aim for is a favorable one. Inasmuch as I try to avoid producing an unfavorable reaction (unless very slight) I again half agree with those who would avoid reactions. This statement of the effects I seek to obtain and to avoid will explain the method I employ in determining the dosage.

The effect of tuberculin can usually be seen in the opsonic curve, the leukocytic count, the leukocytic differential picture, the Arneth count, the temperature curve, the subjective and the objective symptoms and the physical signs. A study of all or of any one of these will give valuable information as to its action. Wright recommended that dosage be regulated by the effect on the opsonic index, but the difficulty and the errors in making the test and the fact that three or more determinations of the index each day are necessary for accuracy, render this method impracticable. Strickler and I, in a preliminary communication,² suggested that tuberculin dosage be regulated by the effect on the Arneth and the lymphocytic curves, but we have not yet examined a sufficient number of cases to permit us to speak with any authority on this point. Dürel³ determines his dosage by its effect on the Arneth index, but as his results differ from those of Strickler and myself, all I can say is that in his hands it seems a safe and accurate guide. The time required for a differential count militates against its availability as a routine procedure, especially in the hands of the busy practitioner and among patients who cannot afford to pay for such laboratory tests. It is possible, on the other hand, by carefully studying the clinical symptoms and the temperature curve, to gain some knowledge as to the effect produced by each dose of tuberculin; and, indeed, Latham and Inman⁴ have shown that when a patient suffering from tuberculosis feels better and his symptoms show amelioration, his opsonic index is raised, and that a falling index is often associated with a peculiar frontal headache just above the eyebrows, with lassitude and a general feeling of malaise, with loss of appetite, a quickened pulse, increased expectoration, restlessness and inability to sleep. It has been my experience that slight clinical symptoms of an unfavorable reaction occur before there is any notable alteration in the temperature. These slight symptoms are often unnoted by the patient unless his attention is particularly

2. Solis-Cohen, Myer, and Strickler, Albert: The Effect of Tuberculin Treatment upon the Leukocytic Picture (a preliminary report), *New York Med. Jour.*, 1912, xcv, 53.

3. Dürel, Wallace G.: The Polynuclear Neutrophil Leukocytic Count as a Guide for the Administration of Tuberculin. *Tr. Nat. Ass'n for the Study and Prevention of Tuberculosis*, 1912, p. 415.

4. Latham, Arthur, and Inman, A. C.: A Contribution to the Study of the Administration of Tuberculin in Pulmonary Tuberculosis, *Lancet*, London, 1908, ii, 1280.

* Read before the Philadelphia Clinical Society, May 4, 1914.

1. Solis-Cohen, Myer: The Use of a Very Minute Initial Dose in Tuberculin Therapy, *New York Med. Jour.*, 1913, xcvi, 268.

called to them and sometimes can be elicited only by persistent questioning. In order not to miss this important evidence as to the effect of the doses already given, which must serve as a guide in the determination of the next dose, I always question the patient closely as to how he feels on the day of the tuberculin and on the day afterward, as compared with the days of the interval between doses. Of course one should avoid leading questions and should be careful not to suggest the answers. I ask, for instance, if the appetite on the day tuberculin is given is the same as, or better than, or worse than on the day preceding or on the day following the dose, or on the next day. Every new symptom and every change in an old symptom I put down as possible evidence of a reaction—favorable or unfavorable. To be on the safe side, in regulating the dosage I regard the occurrence of new unpleasant symptoms or the exacerbation of old symptoms on the day of or after the dose as probable evidence of an unfavorable reaction.

The next dose of tuberculin can be the same as or greater than or less than the last dose. In determining this dose I am guided by the following rules:

The next dose should be the same as the preceding dose, when the latter was followed by a favorable reaction, such as a feeling of well-being, rise of spirits, increase of appetite, fall of an elevated temperature to normal, or reduction of the extent of the daily fluctuation; or when the preceding dose was followed by a very slight unfavorable reaction that lasted but a few hours, or at most a day, and was then followed by an improvement in the symptoms or general condition.

The next dose should be less than the preceding dose if the latter caused symptoms of an unfavorable reaction, such as rise of temperature, increase of symptoms, malaise, anorexia, pains, loss of weight, etc. (with the one exception just mentioned), or if definite and prolonged painfulness and inflammation occurred at the site of injection—the so-called skin reaction. If the rise of temperature and the other symptoms lasted but a few hours, the dose should be reduced slightly—a half, for instance. If the rise and the symptoms lasted all day, the next dose should be one-tenth, or less, of the preceding dose. When the reaction has been marked or has lasted several days in spite of rest, the next dose should be one hundredth to one thousandth of the last dose.

When the last dose has had no effect of any kind, it should be increased at the next administration. Even in febrile cases in which no change one way or the other is noted in temperature or symptoms, the dose should be increased until signs of a favorable or an unfavorable reaction appear. When the effect of a hitherto appropriate dose is passing off, as shown by the last dose being followed by a rise to a higher level of a temperature which has been kept down, or the reappearance of more marked daily fluctuations and an increase of symptoms which had been ameliorated, the next dose should be increased.

The rate of increase in ordinary cases should be about 50 per cent. of the preceding dose. The course of tuberculin so commonly given in series of nine doses beginning with 100 per cent. increase and ending with an 11 per cent. increase, followed again by 100 per cent. increase in the next series, I consider dangerous. The scheme is represented thus: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 20, 30, etc. If a scheme is desired

the following is much safer: 1, 1.5, 2, 3, 5, 7, 10, 15, 20, 30, etc. Occasionally, when a very minute initial dose is given without the slightest effect, a more rapid rate of increase—not exceeding 100 per cent.—may be justified, provided the patient is closely watched and quizzed for the first appearance of a slight reaction. In patients who have had to have their dose reduced on account of a reaction the subsequent increase or dose should be made very gradually and cautiously, from 10 to 25 per cent. of the preceding dose being sufficient increase.

The length of the interval between doses requires consideration. Ordinarily, in patients who have shown no effect of any kind from tuberculin and in those who are doing well on it, an interval of seven, five, or even three days is usually satisfactory. It is best to begin with a seven days' interval. In advanced cases and in susceptible and nervous individuals, and with the larger doses, ten days would often be better. After an unfavorable reaction one must wait until all the reactive symptoms have disappeared. If the reaction has been severe it is best to postpone the next dose until a week or more after the disappearance of all symptoms. When the depression of the temperature curve lasts but three days and then rises until the next dose is given, or when the symptoms that have been ameliorated return after three days, the next dose should be given at the end of three days, just before the effect of the preceding dose has passed away. One can often tell from the reappearance of fever and other symptoms about the length of time one dose of tuberculin exerts its influence and can then give the next dose as the effect of the last is wearing off.

The dosage and the interval are of the utmost importance in the use of this dangerous remedy. A physician who does not wish to give the time and attention their determination demands, should never administer tuberculin. Otherwise he cannot obey Hippocrates' injunction to do good or do no harm.

COLLARGOL IN PYELOGRAPHY

WITH REPORT OF AN INTERESTING CASE

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CHARLOTTE, N. C.

In looking up the literature on the subject, I find but few mortalities reported following the use of collargol, but a number of cases in which great damage has been done the kidney as shown by subsequent operation. The pathologic findings in these cases have been similar but the theories as to the cause of the destructive action of the remedy differ with the various observers.

There is also great divergence of opinion as to the toxicity of this drug; some claiming that it has an irritating and even cauterizing effect, while others assert that it has no injurious effect whatever on the pelvic mucosa, the tubular epithelium or other tissues of the kidney. There are still others who seem to be of the opinion that the kidney cells have the power of ingesting and distributing the drug throughout the entire kidney, in other words, the theories are that the drug may be distributed by absorption or by active diffusion under pressure.

From my own observations, I am of the opinion that the injurious results following the use of collargol in pyelography are from a diffusive process under pres-

sure rather than passive absorption. We are all familiar with the idiosyncrasies of certain people to certain drugs. I have seen in some cases more reaction follow the use of silver nitrate in 0.025 per cent. solution injected into the kidney pelvis than I have in others in which a 5 per cent. solution was used. There is no reason why a patient should not have the same idiosyncrasy for collargol and why a spasmodic contraction of the kidney pelvis should not be set up when the pelvis is filled with the collargol solution. Should a contraction occur while the ureter is blocked with the ureteral catheter and filled with this preparation and held in, even though the solution is not being injected at this time, is it not perfectly reasonable to suppose that diffusion would take place under pressure? This gives the gravity method a decided advantage over the syringe-forced method, since the fluid would have a back flow under nephritic pelvic contractions; yet I do not believe this is without danger.

CASE REPORT

History.—The case I wish to report was referred to us by Dr. Gibbon for cystoscopy and radiography for persistent symptoms suggesting nephritic lesion. The patient was a married woman 35 years old, fairly well nourished. She had borne no children and enjoyed good health until three years previously when she suffered with acute cystitis and apparently never fully recovered from it. She was admitted to the hospital April 16, 1914. A roentgenogram was immediately taken of both kidneys and they proved to be negative as to stone. The ureters were then catheterized. A perfectly clear urine came from the right intermittently. This indicated that there was no hydronephrosis on that side. Chemical and microscopic examination of this urine was negative. The urine from the left kidney was cloudy and came away continuously until nearly 3 ounces of urine had been withdrawn, when it became intermittent. This urine contained pus, a few blood-cells and a few hyaline and granular tube-casts, which showed that we had to deal with a left hydronephrotic kidney.

A 10 per cent. solution of collargol was injected slowly into the pelvis of the kidney with a syringe until the first indication of distention or pain was experienced by the patient and a roentgenogram was taken. Twelve c.c. of the solution were injected into the pelvis of the kidney. This could not have filled the kidney pelvis more than half full at most. The catheter was allowed to remain for probably ten minutes to allow the collargol to drain away. There was no obstruction to the ureteral catheter to prevent the outflow of this preparation, or indications of hemorrhage.

A few minutes after the injection the patient complained of pain which gradually grew severe, the pulse weak and rapid, and she presented the appearance of a very sick woman. She suffered immediately almost complete suppression of urine, the catheterized specimens ranging from 2 to 3 ounces each twenty-four hours. This was loaded with albumin and blood. Morphine was given for the pain and various remedies were administered and applied to counteract shock but with no decided results. Her pulse ranged from 104 to 120, temperature from 96 to 100 F. until death on the fifth day. Large hemorrhagic areas appeared around the site of each hypodermic injection. The patient suffered severe hemorrhage from mucous surfaces and especially from the mouth and bowel.

In this case an amount of collargol not more than one-third of the pelvic capacity was used.

It was impossible to get a complete post mortem in this case but fortunately I secured the kidneys. The pathologic report is as follows:

Pathologic Findings.—The left or injected kidney is somewhat harder than normal over certain areas. Pelvis about twice the size of the opposite or normal kidney. Just beneath the capsule at the upper pole and at the lower half of the

anterior surface of the kidney are seen dark areas which are evidently collargol deposits. There is hemorrhage beneath the capsule at these points. The capsule is slightly adherent over the pelvis. On section, the cortex is very soft to the touch except where collargol is deposited. The pelvis and calices are partially filled with clotted blood. The pyramids are deep red. The cortex is grayish brown.

The right kidney is about normal in size, flabby and soft to the touch. Capsule slightly adherent. On section, no collargol is seen grossly. The pyramids have a pinkish color. Microscopically, the collargol is seen through the whole of the section. It is seen almost entirely in the interstitial tissue. A few granules are seen in some of the larger blood-vessels. The whole section is almost bloodless except for areas of old hemorrhagic spots in portions near heavy collargol deposits. The cells of only a few of the glomerular tufts show nuclear staining.

Microscopically, the right kidney may be divided into two distinct zones, one composed of the straight collecting tubules and the other the convoluted tubules and glomeruli. In the lower zone the blood-vessels are filled with blood. They show granules of collargol both in the lumen of the tubules and within the leukocytes. Several tubules contain hyaline casts. The cells of some contain granules of collargol.

In the cortical zone the blood-supply is completely cut off. There is diffuse degeneration both parenchymatous and interstitial. The individual cells of the tubules and glomeruli have lost their outline completely, the whole being composed of granular material. The outline of the tubules and glomeruli is still visible in most instances.

From gross and microscopic appearance we would say the changes present are due in the injected kidney to a mechanical blocking off of the blood-supply, probably from pressure of collargol in the kidney tissue. In the right kidney the condition is due to cutting off of blood from the secreting portion of the kidney. What caused this lack of blood-supply has not been ascertained from the gross kidney or from the sections examined. It may possibly be due to collargol embolism.

The disastrous results and findings in this case led me to perform the following experiments on dogs:

EXPERIMENTS ON DOGS

Dog 1 was etherized, the bladder opened, ureteral catheter inserted into the right ureter for about 4 inches and 10 c.c. of a 10 per cent. solution of collargol were injected slowly into the pelvis. The dog died within five minutes thereafter. On post-mortem examination, we could find no special cause for the sudden death of the animal.

Gross examination of the right or injected kidney shows a dark green or black appearance beneath the capsule of the whole organ. On opening the kidney blood-clot and collargol are present in the pelvis near the opening of the ureter. The whole kidney is somewhat darker than normal. Collargol shows grossly only at the poles. The deposits are pyramid-shaped, being narrow near the pelvis and broader toward the cortex.

Microscopically, the collargol is seen in the tubules, blood-vessels and the interstitial tissue. It is thickest near the pelvis where there is considerable flattening out or massing of the tubules due to pressure. No collargol is seen in the glomeruli.

There are clots in the heart and especially the right side presenting a greenish appearance, due to collargol. There is no macroscopic lesion of any of the organs other than the injected kidney.

Microscopically, the liver shows collargol throughout the whole organ. The collargol is present in the intralobular capillaries. The capillaries are dilated and congested. No collargol is seen in the liver cells. Some of the larger vessels in the portal canals show minute granules of collargol.

No collargol is seen in the heart-muscle or interstitial tissue. Many of the vessels in the heart-wall show numerous granules of collargol. This is seen in the walls of both ventricles.

Granules of collargol are seen in many of the alveolar capillaries of the lungs and in a few of the larger vessels.

Dog 2 was etherized, the bladder opened and 5 c.c. of the solution were injected into the right kidney as in Dog 1. This animal did quite well and was killed in forty-eight hours. In gross appearance this kidney shows many small areas, black or green in appearance, over the whole surface just beneath the capsule. On the anterior surface near the center and at the upper pole are two larger areas having the characteristic color of collargol. When the kidney was sectioned these areas were seen to extend from the cortex to the pelvis. Above this the collargol was seen spreading out to the cortex.

Microscopically, the kidney shows acute diffuse nephritis. There are several areas of infarction, the kidney tissue being destroyed and its place being taken by leukocytes which show phagocytosis of the collargol. In the collargol area near the upper pole there is a distant break in the lining of the pelvis, the fissure extending about 2 mm. into the substance of the kidney. This break is partially filled with blood-clot. The collargol is present in the tubules, blood-vessels and interstitial tissue.

Macroscopic appearance of left kidney is normal. Microscopically, no collargol is seen. The kidney is apparently normal.

Macroscopic appearance of the liver, lungs and heart normal.

In the liver, microscopically, many of the endothelial cells show phagocytosis of small granules of collargol.

The lungs, microscopically, show a few deposits of granules in the interstitial tissue.

In the heart, microscopically, granules are seen in some of the larger vessels in the heart-walls.

In the spleen, microscopically, the large endothelial cells show phagocytosis of particles of collargol throughout the whole of the organ.

From the pathologic findings in this case and our experimental work on dogs, I am convinced that this preparation in pyelography is not without danger, and that we should continue our search for a substance less harmful for this purpose.

I am indebted to my associates, Dr. J. W. Squires and Dr. Harvey P. Barrett, pathologist at the Charlotte Sanatorium, for the radiographic and pathologic findings in connection with this work.

THROMBOPHLEBITIS OF THE SIGMOID SINUS OF OTITIC ORIGIN WITH- OUT LOCAL MANIFESTATIONS

EDWARD L. MEIERHOF, M.D.

NEW YORK

The frequency with which the sigmoid sinus is involved in middle-ear inflammations is greater than was formerly suspected. This advance in our knowledge can be attributed to several factors: the more radical technic in operating on the mastoid and thus laying bare and exposing an unsuspected diseased sinus, and the comprehensive diagnostic aids which we resort to in interpreting the true condition underlying unusual cases of middle-ear inflammation. There is, however, one fact to be borne in mind—that the severity of an acute or chronic purulent inflammation is not the only cause of the possible extension of the original disease into the neighboring venous channels.

It is very possible for a mild acute inflammation of a very short duration, when the pain and discharge cease, to be followed in a few days by such serious complications as phlebitis and thrombosis of the sigmoid sinus. During this interval of apparent well-

being, the patient and family may have paid no attention to the ear, while the patient may present a train of symptoms not at all referable to the ear but to some intercurrent acute affection, say of the abdomen or of the knee with their usual clinical pictures.

If medical advice be then sought, the patient may be found to have a temperature of 104 or 105 F., perhaps preceded by a chill. The slight ear disturbance of the previous week may have been forgotten. There may be at this time no subjective symptom referable to the ear. A physical examination is made, and possibly a tentative diagnosis of typhoid fever may suggest itself in the case of an adult, or, if a young child, a central pneumonia or an influenza. If the patient enter a hospital he may be considered a medical case, nothing of an otologic nature being suspected.

At the hospital a general examination is made, and nothing is revealed, whereupon an examination of the eye-grounds and of the ears is resorted to. I have had opportunity to see in a small hospital, in a comparatively short time, four cases of unexplained high temperature turn out to be due to sigmoid sinus thrombosis in patients who subjectively gave no evidence of ear disease. In addition to these four cases, I have had two similar experiences in private practice. My first experience was with a private case. The patient was a young man whose temperature had been high for a number of days, with marked remissions. He was under the care of an experienced practitioner, who could not account for the febrile movement. A few hours before I saw the patient, a laboratory expert, also an excellent clinician, saw the patient, but failed to interpret the high temperature. I was asked to see the case as an otologist as a routine measure.

I examined the temperature chart before seeing the patient. It showed the typical pyemia curve as we observe it in thrombophlebitis. The patient had no visible discharge from the ear, but down in the fundus of the canal was found a small quantity of foul pus.

There was no manifest pain anywhere around the ear, or any swelling in the canal. Ordinary pressure over the mastoid revealed no tenderness, whereas deep pressure on the mastoid at the auricle, on the level with the roof of the external auditory canal disclosed tenderness. Examination of the opposite side was negative. It was thus very apparent that we were dealing with a case of sinus thrombosis and not of typhoid fever. I advised immediate operation irrespective of the laboratory report, as I feared too much time had already been lost.

The patient was operated on at midnight. The mastoid was found to be markedly sclerotic, and on exposing the lateral sinus groove, thin pus welled up. Further exposure showed the entire sigmoid sinus to be empty, the sinus having disintegrated, while a large area of the dura was bathed in pus.

At the close of the operation the patient's pulse was very weak, either as the result of the shock of the operation or of the narcosis, or possibly of both, especially as the loss of blood was not great, and it was considered inadvisable to prolong the operation by ligaturing the jugular vein.

The next day there were symptoms of pulmonary involvement and nephritis, and further operative procedures were abandoned. The patient's condition was critical for five or six days; nevertheless recovery took place without further eventualities.

While the patient had ear symptoms, they were not marked enough to attract attention.

The second case also was one that I was called to see as a routine measure, because of a temperature of 105 without apparent cause. (This patient had chills with high temperature.) The examination of the ear showed a subacute process in the tympanum; the drum membrane was lusterless and somewhat boggy; there was no apparent swelling of the roof or posterior wall of the canal. Incision of the drum membrane gave vent to a slight serous discharge. This measure did not improve the patient's condition. Three other otologists saw this case, but none expressed a positive opinion, though the temperature continued to zigzag in the characteristic manner. Finally an abscess (metastatic?) showed itself somewhere in the abdomen, followed by others in other parts of the body. The patient eventually recovered. This history was obtained from the family physician, and I cite it even in this superficial manner because of my experience, in a similar case, with the mildest form of otitis.

This other patient was admitted to the hospital on the recommendation of her family physician as a typhoid suspect. She was a young woman from Eastern Europe, whose mind was not sufficiently clear to enable her to furnish a reliable history, but it was learned that ten days previously she had a slight pain in the right ear, for which she went to the outdoor service in one of the well-known otologic hospitals, where the drum membrane was incised. The pain continued but no discharge followed. I saw the patient at the request of the attending hospital physician, twenty-four hours after admission, as he could not reach a diagnosis. A slight swelling over the right knee was present. During this time the temperature had risen twice to 105, with a fall to 102, not accompanied by chills. The blood-count was abnormally low—5,500 leukocytes, and 85 per cent. polynuclears—which indicated profound sepsis with slight resistance. Examination of the ear revealed a lusterless and uniform drum membrane and canal free of secretion. The canal wall was perfectly normal in appearance, neither red nor swollen in the slightest degree. The mastoid was not tender to deep pressure, when compared with that of the opposite side. There was a suspicion of tenderness in the neck along the anterior border of the sternomastoid in the region of the tendon. An incision of the drum membrane showed it to be flabby, while the drum cavity contained only a slight amount of serous fluid; this latter, when examined microscopically, proved to be free from pathogenic organisms. A blood-culture had been made and proved negative. The agglutination test for typhoid was also negative.

A surgeon of large experience did not think the case a general surgical one, and an otologist expressed a negative opinion in regard to the possibility of a thrombosis of the lateral sinus.

In the meantime, the patient's temperature continued to rise and fall, ranging from 102 to 105 and 106, until a week had been wasted in seeking a cause for the temperature. No chill had been observed, nor any sweating. The patient took food; there was no disturbance of the bowels; the urine, however, showed some albumin and hyaline-casts. The fundi oculi were normal. Repeated blood-counts showed the same leukocytosis. Delirium was frequently present. On the eighth day of the patient's stay in the hospital, I ventured to make an exposure of the mastoid and lateral sinus on the right side. The mastoid cortex and subcortical cells appeared free from pus and granulation tissue until the region of the antrum was laid

bare, when a small quantity of creamy, odorless pus welled up. The sinus was found to be close to the posterior wall of the external auditory canal, and on being exposed was found to be solid almost from the torcula down to the bulb. A roentgenogram would have shown this very well. The neck was laid open for the removal of the internal jugular vein, and on incising the carotid sheath the jugular was found to be empty, the thrombosis having disintegrated into the sheath. Six hours after the operation the temperature rose to 108, and thirty-six hours after the patient succumbed. Two weeks later, by a strange coincidence, the surgeon who saw this case was called by a colleague to see a man who was having a temperature of 105, with a slight red swelling over the patella. The patient was asked casually by the surgeon whether he had had any trouble with his ears, and replied that two weeks previous he had had an earache with a discharge of fluid, but that it did not bother him further. The patient was removed to the hospital, though the otologist, a man of wide experience, believed that neither the ear nor lateral sinus was responsible for the condition. A positive blood-culture, however, resulted in a decision to open the mastoid and expose the lateral sinus, whereupon the sinus was found to be thrombosed. The patient likewise succumbed.

About a year ago I reported a case before the Otological Section of the New York Academy of Medicine, which had many of the features of the first case herewith reported, but which was first seen by me in a general hospital.

The report of this case aroused no discussion or comment. After the meeting, one of the members expressed surprise that no discussion was occasioned by the report of the case, as the experience was a rather unusual one. I could understand this, because his observation is limited entirely to an otologic hospital service. However, I am not unmindful of the fact that others have had experiences similar to mine, but the literature on this subject has been more or less buried away in periodicals devoted to otology, though the subject deserves a wider publicity.

In connection with this complication of otitis, either in recent or old cases, I would like to direct attention to the great importance that attaches to pain in the region of the ear, either spontaneous or induced, as a diagnostic factor in the clinical picture. This is apt to be misleading, for one cannot always depend on the pain factor as a symptom in the diagnosis of ear-disease and its complications.

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The Code of Hammurabi.—Medical remuneration and the legal regulation of medicine were accurately defined as early as the reign of Hammurabi (c.2200 B.C.).

The laws of Hammurabi on this subject lay down that:

"If a physician cause a severe operation wound with a bronze operating knife and cure the patient, or if he open a tumor (cavity) with a bronze operating knife and save his eye, he shall have ten shekels of silver.

"If it be a freed man, he shall have five shekels.

"If it be any one's slave, his owner shall give the physician two shekels of silver.

"If the physician make a severe wound with the bronze operating-knife and the patient die, or if he open a growth with a bronze operating-knife and the patient lose his eye, he shall have his hands cut off.

"If a physician heal a broken bone or cure diseased bowels, the patient shall pay the physician five shekels of silver."—Neuburger, *History of Medicine*.

A CASE OF SPASMODIC ILEUS IN
AN INFANT SIMULATING
INTUSSUSCEPTION

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SCRANTON, PA.

The following case is reported because of the rarity of such occurrence, judging from the literature.

Hilda B., aged 8 months, breast-fed, well-nourished, previously healthy infant, suddenly became ill at 7 p. m., July 28. Two hours later she was seen by me. The mother reported that the infant had a normal bowel movement about 5 p. m. and had been playful and happy until about 7 p. m., when suddenly it began to scream. The face became pale, a cold sweat suffused it, and the legs were drawn up over the abdomen. The screaming continued at about five-minute intervals, the child dozing between and not noticing any one.

On examination, I found the child listless and inclined to be drowsy, the thighs held flexed on the abdomen, twisting and squirming every few minutes as if in severe pain and crying out at intervals. The abdomen was flat, soft and relaxed with the exception of the upper right quadrant which was slightly rigid. Here a soft, smooth, cylindrical mass could easily be made out extending slightly across the midline just above the level of the navel rolling under the fingers. This spot was quite tender. The remainder of the abdomen was negative. The temperature was $97\frac{1}{2}$ by rectum, pulse 130. The child had been given nothing except the breast. The mother, however, had been working very hard, ironing all day and was hot and very tired at the last nursing. A small soap-suds enema was given; the first portion returned clear, the very last was blood-stained and contained considerable mucus. No feces or gas passed. A rectal examination was negative, with the exception of about a dram of bloody mucus appearing on the withdrawal of the finger. Because of the suddenness of the onset, collapse, subnormal temperature, apathy alternating with crying spells, presence of a palpable mass, localized tenderness and the bloody mucous stools, a diagnosis of probable intussusception was made. The child was removed to the hospital for further observation. During the night the child vomited several times, first stomach contents, then a greenish-yellow fluid and a brownish liquid, was restless and cried out frequently. A bloody stool was passed, but no gas. The mass was still palpable in the morning.

Operation at 9 a. m., assisted by Dr. Kiesel. When the abdomen was opened the distended small intestine pressed up through the incision; this was traced downward for about 3 feet where the remainder of the small intestine was found in a state of complete collapse, absolutely empty and as flat as a piece of tape. The dilatation had ended as abruptly as if a clamp had been applied. The colon was normal but contained a considerable quantity of blood. The condition was that of spasmodic ileus. The intestines were replaced, abdomen closed, lower bowel washed out with saline solution, atropin and morphin administered. The infant was in fair condition after the operation and slept most of the day. There was no further vomiting; the bowels moved three times during the night, stools being of blood and mucus. Nursing was resumed on the second day; the following stools were normal with exception of a few greenish particles. Recovery was rapid, the child playing in the crib on the fourth day.

I have been able to find very little mention of this condition in infants in the text-books on children's diseases. Is it not probable that many of the reported cases of intussusception in which spontaneous reduction has been said to take place, and others, in which medical measures, enemas, morphin, etc. have been reported successful as cited by Still, Treves, Holt and others have been cases of spasmodic ileus and not cases of intussusception? I know of no safe way to differentiate the two except by an exploratory operation.

506 Dime Bank Building.

Therapeutics

PREVENTION IS GREATER THAN CURE

(Continued from page 1297)

IV

HOOKWORM DISEASE

(Uncinariasis)

This disease is found in all tropical and southern temperate zones; in the United States southward from the Potomac River latitude through to the Pacific coast. The symptoms are laziness, lassitude, weakness, loss of physical and mental ability and vitality, loss of weight and anemia. Children do not properly grow and adults become shiftless, incompetent, and poverty stricken, and they, with their families, become a tax on the community. Hence hookworm eradication is an economic question.

Hookworm disease is said to go back to ancient Egyptian times, but the parasite was not found until 1858, by an Italian; its relation to anemia was not discovered, however, until 1877, by Grassi and Colomiatti. It was named *Ankylostoma duodenale*.

The hookworm was discovered in Porto Rico by Major Ashford, Surgeon of the United States Army, but to Dr. C. W. Stiles of the United States Public Health Service belongs the honor of having found the worm in the southern states and of having shown that it differs generically from the Old World worm, but that it causes the same symptoms. The American type of worm is called *Necator americanus*.

Not to go into the life history of this parasite, suffice it to say that it may live in large numbers in the intestines of human beings for years, not only feeding on the blood and using up its nutriment, but biting the intestinal walls and causing hemorrhages, and by both means producing a progressive anemia. Eggs from these worms pass off with the feces, grow into minute larvae in the soil so contaminated, enter another human intestine, rarely by means of infected food such as uncooked vegetables and fruit. In the majority of cases the larvae pierce the skin of the leg or other part exposed to contaminated feces and reach the intestine. In this way a barefooted child or adult may acquire infection through exposure of his feet.

The excrement of carriers of the disease must never be allowed to infect the soil. Also every carrier must be discovered, and it is the duty of each community to discover and treat every carrier within its confines, and even to be suspicious of visitors.

The establishment of sewerage systems in cities should eradicate the disease from those localities. Compelling the erection and use of sanitary privies, be they ever so inexpensive and simple, is another necessary preventive measure outside of sewered towns. An old-fashioned privy, wherever found, should be abolished. Its odors are offensive, it breeds flies and contaminates the soil, and the drainage may reach water-supplies. A privy to be modern and sanitary should be properly ventilated and well lighted, but thoroughly screened with fine-mesh copper wire, to prevent flies and mosquitoes from entering the building. The building should be firmly cemented to the foundation; there should be no leaks or openings. There should be a hinged door in the rear, opening under the seats for cleaning purposes. The seat covers should be self-shutting. The excreta

should be received into a water-tight box or pail, and whether the wet or dry system is selected is a matter for the decision of the local health authorities. Just what disinfectant shall be used, chlorinated lime, or phenol (carbolic acid) solutions, or some oil that repels flies and other insects, is also for the decision of the local board of health. The sanitary privies recommended by the United States Public Health Service will be found described in United States Farmer's Bulletin 463.

Another preventive of infection by hookworm is to insist that shoes be worn in all infected regions.

The disease can be discovered by giving the specific treatment in a suspected case and then sifting or washing the stools through cheese cloth, when worms will be found, if present.

The treatment is to give little or no supper, and at bedtime a dose of magnesium sulphate. In the morning, as soon as the bowels have moved freely, one-half the dose of thymol, in capsules, is given, and in two hours the remainder of the thymol. Two hours later another dose of magnesium sulphate is administered. After movements of the bowels from this dose food may be taken, but only coffee or tea, without milk, should be allowed during the period of the treatment, namely, until the thymol has supposedly all passed out of the body. Absorption of thymol is not desired, as it may cause unpleasant symptoms. Alcohol and oils should not be given either before, during, or even soon after the treatment. For one hour after taking the thymol the patient should lie on his right side to hasten the passage of the drug and liquid through the pylorus into the intestines.

The dose of thymol depends on the age, but is large. Ferrell¹ suggests 4 gm. (60 grains) for an adult dose (that is, from 20 years of age upward). Doses for children and youth may be readily estimated by the following formula, namely: At 15 years, $\frac{3}{4}$ of the age, $\frac{3}{4}$ of the adult dose; at 10 years, $\frac{1}{2}$ the age, $\frac{1}{2}$ the dose; at 5 years, $\frac{1}{4}$ the age, $\frac{1}{4}$ the dose; at $2\frac{1}{2}$ years, $\frac{1}{8}$ of the age, $\frac{1}{8}$ of the dose. If the patient is much underweight for his age, the dose should be reduced accordingly. The thymol should be powdered and placed dry in capsules. One-half the dose decided on is given at 6 a. m. If the bowels have been well moved from the dose of magnesium sulphate of the night before, the other half of the dose of thymol should be given at 8 a. m., both doses being taken with plenty of water. Ferrell adds sugar of milk in equal parts to the thymol, and says he thinks the drug acts better.

In one or two weeks the treatment should be repeated, unless the microscope shows the feces to be free from the parasite and its eggs. Sometimes a third and even a fourth treatment may be needed. The action of the thymol may be hastened by (at the moment of swallowing) uncapping the capsules.

Thymol when absorbed acts like phenol, but it is slowly dissolved by the gastro-intestinal fluids and hence, is absorbed slowly. Any oil or fatty substance hastens its absorption. Convulsions are probably not often caused by thymol poisoning, but great weakness and finally collapse are the gross subjective symptoms. Objective symptoms of its undesired absorption are albumin and even blood in the urine. Fatty degeneration of the liver and congestion of the kidneys and lungs are pathologic findings.

To forestall any possible great absorption of thymol after large doses are administered in hookworm disease, a brisk cathartic (Epsom, Glaubers, or Rochelle salt) should be given and repeated, if free catharsis does not occur within a few hours after taking the thymol. Castor oil, or any other oil, should of course not be the cathartic used. If symptoms of poisoning occur, stomach-washing, colon-washing, and sodium sulphate or potassium and sodium tartrate should be the means used to promote elimination. Strong black coffee should be given, and hypodermic injections of atropin, strychnin, and pituitary extract should be administered and the patient should be surrounded by dry heat. Later, any kidney congestion should be treated as an acute nephritis.

Except as a specific for hookworm, thymol should probably never be used internally. As a bowel antiseptic it is too dangerous a drug to be used repeatedly, unless the dose is too small to be of any value.

Ferrell's dosage for adults for hookworm disease is as follows:

R Thymolis..... gm. 4 | or gr. lx
Fac capsulas siccas 10.

Sig.: Take 5 capsules, with plenty of water, in the early morning, as soon as the bowels have moved. Take the other 5 capsules in two hours. Two hours later take $\frac{1}{2}$ ounce of Epsom salt, which should be repeated if it does not act in four hours.

MOSQUITO PEST

This ubiquitous tormentor may be eradicated and malarial fever abolished in most communities. It is only necessary to remember the following facts, and to act accordingly:

1. Salt water marshes diluted by fresh-water streams breed mosquitoes; kerosene oil will prevent their development.

2. These salt-water mosquitoes do not carry disease.

3. Fresh-water mosquitoes may carry disease (anopheles, malaria; stegomyia, yellow fever).

4. Fresh-water mosquitoes may develop in any little pool of water, in the street, in a back yard, in a tin can, in a pail of stagnant water, in a gutter or drain, and even when water stands in a vessel in a building.

5. Such pools of water being abolished, no mosquitoes can develop.

6. Kerosene, 1 ounce to 15 square feet of water, added from time to time to water that will not readily flow or tends to be stagnant, but cannot be eradicated, will prevent all growth of mosquitoes.

7. Mosquitoes, unless wind-blown, travel only a few hundred yards from their source of breeding.

8. Most disease-breeding mosquitoes are active only at night.

9. Fine mosquito-netting keeps them out of houses.

10. If they have entered a house they can only be thoroughly eradicated by complete fumigation.

11. If one must go to malarial districts, the prophylactic dose of quinin is from 3 to 5 grains a day of the sulphate.

OPHTHALMIA NEONATORUM

The prevention of this disease, so serious for the babe's future, is not attained by discussing the value of eugenics, or attempting the regulation of prostitutes, or demanding the always non-successful reporting of gonorrheal cases. It will be more certainly secured by insisting that every physician and every midwife (by continued and repeated instruction) shall

1. Ferrell, John A.: Hookworm Disease, THE JOURNAL A. M. A., June 20, 1914, p. 1938.

use Credé's method, namely, to instill into each eye of every new-born babe 2 drops of a 2 per cent. solution of silver nitrate. Every eye inflammation in the new-born or occurring shortly after birth should be considered ophthalmia until the microscope shows that it is an innocent inflammation. If gonococci are found, the little patient should be placed in the care of a skilled oculist.

TONSILS

The danger from chronically diseased tonsils is not sufficiently recognized by the majority of physicians, although specialists and bacteriologists have long urged that they are a menace to health and should be extirpated. Some laryngologists, and they have a goodly number of internists as followers, would extirpate (enucleate) all tonsils that have the least signs of chronic inflammation, especially if they are even slightly enlarged.

Before advising radical operation, that is, enucleation, it should be remembered that these glands probably have a function as outposts of our fortifications against disease germs, and when they are extirpated or are hopelessly diseased the deeper neck and bronchial glands become more readily affected by pathogenic germs. It should be remembered that complete enucleation is a major and serious operation. With the above caution, the therapeutic necessity of eradicating all diseased tissue in a tonsil by slicing, curretting, cauterizing, or, if need be, complete enucleation, is strongly urged. Also, as a measure of disease prevention, to eradicate tonsils containing infected pockets is more necessary than to pull or fill a decayed tooth.

It should be recognized that a tonsil may be badly diseased and yet not be prominent. Also, disease may proceed from a tonsil and yet there may be no immediate preceding tonsillar inflammation.

It has been shown that pathogenic germs, as pneumococci and various streptococci, especially hemolytic streptococci, may be harbored in diseased tonsils. These germs have been found so many times in acute and chronic arthritis and acute and chronic endocarditis, and in other infections, as to show a direct causation.

The surface bacteria may not give the cultures that the deeper-seated pockets or abscesses in the tonsils produce. Hence, in rheumatic cases, before the tonsils are considered innocent, whether a tonsillitis precedes the rheumatic attack or not, a careful examination of the tonsils should be made.

Infected tonsils may be the cause of influenza, chorea, nephritis, endocarditis, and various pyemic and septic processes, as well as of rheumatism. In fact, all and more than has been said of infected gums and teeth may be said of the danger of chronic suppuration in tonsils. The relation of tuberculosis to the tonsils has long been known. It is quite supposable that anemia, meningitis and neuritis could emanate from infected tonsils as well as from infected gums. While all diplococci found on tonsils are not pneumococci, the latter are found often enough to show that they could be a cause of pneumonia through the infection of others, if not in the carrier. Diphtheria, follicular tonsillitis, and, doubtless, scarlet fever, are caused by infection from carriers who have the causative germs of these diseases on or in their tonsils.

To summarize:

1. The total extirpation of non-suppurative tonsils is not necessary.

2. The extirpation of all diseased parts, or total extirpation, if it is necessary to eradicate the diseased portions, is proper treatment and advisable as soon as discovered.

3. Operative interference is therapeutically urgent in all cases of recurrent tonsillitis, in rheumatic cases, acute or chronic (arthritis deformans), in nephritis, etc., if the tonsils are found diseased.

(To be continued)

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLE HAS BEEN ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. ITS ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT AND IN PART ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS ARE ASKED FOR TO AID IN THE REVISION OF THE MATTER BEFORE PUBLICATION IN THE BOOK "NEW AND NONOFFICIAL REMEDIES."

THE COUNCIL DESIRES PHYSICIANS TO UNDERSTAND THAT THE ACCEPTANCE OF AN ARTICLE DOES NOT NECESSARILY MEAN A RECOMMENDATION, BUT THAT, SO FAR AS KNOWN, IT COMPLIES WITH THE RULES ADOPTED BY THE COUNCIL.

W. A. PUCKNER, SECRETARY.

CYMARIN.—Cymarín is a neutral, non-glucosidal substance obtained from *Apocynum cannabinum* L. and *Apocynum androsaemifolium* L.

Actions and Uses.—Experiments on animals show that cymarín is about equal in activity to the official amorphous strophanthin, which it resembles closely in many of its pharmacologic actions, being far more active after intravenous or intramuscular injection than after oral administration. Toxic doses cause emesis through the action on the vomiting center in the medulla.

Its uses are much like those of digitalis, but it is not absorbed so readily from the gastro-intestinal tract, at least in animals, and probably in man; hence it is better suited for those cases in which intramuscular or intravenous injection is required to elicit the action promptly. (The usual precautions are necessary.)

Dosage.—Single dose for oral administration 0.0003 Gm. (1/200 grain); daily 0.001 to 0.002 Gm. (1/60 to 1/30 grain). Single or daily dose by intravenous or intramuscular injection, 0.0005 to 0.001 Gm. (1/130 to 1/60 grain).

Manufactured by Farbwerkefabrik vorm. Friedr. Bayer and Company, Leverkusen, Germany (The Bayer Company, Inc., New York). U. S. patent applied for. German patent No. 255,537. No U. S. trademark.

Tablets Cymarín.—Each tablet contains cymarín 0.3 mg. (1/200 Gr.).

Amoules Cymarín Solution.—Each amoupe contains cymarín solution representing 0.001 Gm. (1/60 grain) of cymarín.

Cymarín was described by Taub and Fickewirth (*Arch. f. d. ges. Physiol.*, clii, 239), and according to the German patent (No. 255,537) is prepared by extracting *Apocynum cannabinum* and *Apocynum androsaemifolium*, with organic solvents at a low temperature to prevent decomposition of the active substance, and subsequent recrystallization.

Cymarín occurs as colorless, thick, prismatic crystals possessing a bitter taste. It is only slightly soluble in cold water, more soluble in hot water. It is difficultly soluble in benzene, ether and carbon disulphide, but dissolves easily in acetone, alcohol and chloroform. When heated it begins to soften at 130 degrees and becomes completely liquid at 135 to 140 C. Cymarín is very sensitive even to weak organic acids, although it is not a glucoside.

If cymarín be dissolved in hydrochloric acid (Sp. Gr. 1.19), a colorless solution results which on standing becomes green and on heating becomes turbid and then yields a resinous precipitate. If cymarín be dissolved in concentrated sulphuric acid a brown solution results. If a trace of cymarín be dissolved in 2 Cc. of glacial acetic acid, to which is added 3 drops of a 1:20 solution of potassium dichromate, a solution will be formed which, when poured on an equal volume of concentrated sulphuric acid, will exhibit at first a brown zone and above that a bright green colored layer. If a trace of cymarín be dissolved in 2 Cc. of glacial acetic acid, to which is added a drop of concentrated ferric chloride solution, a solution will result which, when poured on an equal volume of concentrated sulphuric acid, will develop a dark zone, and then a bluish green line, which gradually colors the acetic acid a deep blue. If a trace of cymarín be dissolved in 10 Cc. of water and 5 Cc. of normal sodium hydroxide solution, a solution will result which when diluted with 1 or 2 drops of a hydrochloric acid solution of diazobenzene chloride or sodium nitrite yields a blue violet color, which, on acidifying changes to a brick red. If a trace of cymarín be dissolved in 2 Cc. of glacial acetic acid, containing a drop of bromine a solution will be formed which, after being warmed on the water bath a few minutes, yields a precipitate of white flakes on the addition of double the volume of distilled water.

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SATURDAY, OCTOBER 17, 1914

ALLEGED DANGERS TO THE EYE DISPROVED

The eye is of such supreme importance to man in the conduct of his daily life, and its mechanism is so delicate in its structure and adjustments, that it is quite naturally regarded as peculiarly susceptible to all sorts of offending agencies and exposed to a myriad of unsuspected dangers. Many of these fears and beliefs are well grounded. Some of them, on the other hand, have led to unwarrantable conclusions. Certain of the modern illuminants have acquired the reputation, in a somewhat popular way, of being dangerous by reason of injurious effects of the ultra-violet radiation delivered by them.

Drs. Verhoeff and Bell¹ of Boston have just published a preliminary summary of an extensive investigation of the effects of radiation on the various mediums of the eye from the corneal epithelium back to the retina. This work deserves careful study because they have properly emphasized the quantitative aspect of the questions involved. As expressed by them, the vital question is not whether a light source gives ultra-violet radiations, but whether it gives them of such kind, and in sufficient quantity, as to make an injury to the eye possible under practical conditions. The findings of Verhoeff and Bell are expressed, broadly, by the statement that no artificial source of light used for illuminating purposes contains enough ultraviolet radiation to involve the slightest danger to the eye from its effects under any readily conceivable conditions of use, and that such pathologic action as can be obtained experimentally from the ultraviolet is confined to a strictly limited region of the spectrum and obeys perfectly definite quantitative laws in its action.

Among the numerous interesting experimental facts definitely determined is the lack of penetration of most of the effects beyond the outer eye. Even with exposures as great as one hundred and fifty times the liminal for photophthalmia the lens substance is affected to a depth of less than 20 microns (1/1,250

inch), and this superficial effect undergoes in the rabbit complete repair. The lens protects completely the retina of the normal eye even from the small proportion of feebly abiotic rays which can penetrate the cornea and vitreous.

Experiments on rabbits, monkeys, etc., and observations on the human subject prove that the retina may be flooded for an hour or more with light of extreme intensity (not less than 50,000 lucas²), without any sign of permanent injury. The resulting scotoma disappears within a few hours. Only when the concentration of light involves enough heat energy to produce definite thermic lesions is the retina liable to be injured. The retina of the aphacic eye, owing to the specific and general absorption of abiotic radiations by the cornea and the vitreous body, is adequately protected from injury from any exposures possible under the ordinary conditions of life, even without the added protection of the glasses necessary for aphacic patients. To injure the cornea, iris or lens, by the thermic effects of radiation, requires a concentration of energy obtainable only under extreme experimental conditions. Infra-red rays have no specific action on the tissues analogous to that of abiotic rays. Any effect due to them is simply a matter of thermic action, and such rays are in the main absorbed by the mediums of the eye before reaching the retina. Actual experiments made on the human eye show conclusively that no concentration of radiation on the retina from any artificial illuminant is sufficient to produce injury under any practical conditions.

Regarding a number of alleged pathologic effects which have been charged up against radiation, Verhoeff and Bell have this to say: Eclipse blindness, the only thermic effect on the retina of common occurrence clinically, is due to the action of the concentrated heat on the pigment epithelium and choroid, this heat being almost wholly due to radiations of the visible spectrum, within which the maximum solar energy lies. Erythroptosis is not in any way connected with the exposure of the eye to ultraviolet radiations, but is merely a special case of color fatigue, temporary and without pathologic significance. In the case of vernal catarrh and senile cataract they can find no evidence for considering them as due to radiations of any kind. Glass-blowers' cataract, often charged to specific radiation, ultraviolet or other, is regarded as probably due to the overheating of the eye as a whole with consequent disturbed nutrition of the lens.

It is comforting to be told that commercial illuminants are entirely free from danger under ordinary conditions of their use. The glass enclosing globes used in all practical commercial illuminants are amply sufficient to reduce any abiotic radiations very far below the danger point.

1. Verhoeff, F. H., and Bell, L.: The Alleged Dangers to the Eye from Ultraviolet Radiation, *Science*, Sept. 25, 1914, p. 452.

2. The lux is the unit of intensity of light; it equals the illumination given by a standard candle at a distance of 12 $\frac{3}{4}$ inches.

According to Verhoeff and Bell, further, the chief usefulness of protective glasses lies not so much in their absorption of any specific radiations as in their reducing the total amount of light to a point where it ceases to be psychologically disagreeable or to be inconveniently dazzling. Glasses which cut off both ends of the spectrum and transmit chiefly only rays of relatively high luminosity give the maximum visibility with the minimum reception of energy. For protection against abiotic action in experimentation, or in the snow fields, ordinary colored glasses are quite sufficient.

From the therapeutic point of view the Boston investigators maintain that so far as direct destruction of bacteria within the cornea or any other tissues of the body is concerned, abiotic radiations possess no value. This is due, they add, to the fact that abiotic radiations that are able to penetrate the tissues are more destructive to the latter than to bacteria.

THE BASAL METABOLISM OF MAN

Respiration apparatus designed for the estimation of the output of carbon dioxide and the absorption of oxygen—the gaseous metabolism—has now become sufficiently common in physiologic laboratories and even in hospital wards to cease to arouse the surprise occasioned by any scientific device of exceptional novelty. Respiration calorimeters which permit the direct measurement of the heat output are still decidedly uncommon adjuncts to the scientific outfit of the clinic, owing in part to the expense of construction and operation, and in part also to the lack of trained workers who are capable of experimenting in this field of the study of animal heat. The determination of the heat production by so-called indirect calorimetry—by calculation from the data of the gaseous metabolism and certain other factors—is developing into such satisfactory form that the respiration apparatus alone promises to supply adequate information regarding the heat output and energy metabolism, and to render unnecessary the more difficult procedures of direct estimation in a large number of conditions.

The entire subject here referred to has been developed to a point at which there is an imperative need of ascertaining what the “normal,” fundamental metabolism and heat production are under recognized conditions. This necessity of establishing “standards” makes itself felt in all fields of investigation, in the clinic and laboratory alike, where new methods and new apparatus are brought into use. One is repeatedly confronted with the question as to what constitutes “normal” values and what are the ranges beyond which pathologic manifestations are unquestionably indicated. This inquiry has arisen in connection with various common constituents of the blood, like hemoglobin, sugar and urea; it followed in the wake of the earlier experiments with the electrocardiograph when

the users of this sensitive and elegant apparatus began to be puzzled as to the interpretation of the great variety of “curves” furnished by the registration devices employed; and in a similar way the demand is arising for the establishment of some index of normal metabolism measured by the newer methods.

The impetus given to the study of the gaseous and gross metabolism in recent years has resulted in a large number of observations both in the domain of physiology and pathology. In recognition of the paucity of admittedly normal data the Nutrition Laboratory of the Carnegie Institution of Washington, in Boston, has now published a rather elaborate group of statistics gathered from measurements of many men and women.¹ The ranges of age, body-weight, and occupation in this list are wide and, therefore, exceptionally useful. Obviously the average values obtained even from people in presumably good health are likely to vary widely with the presence or absence of certain factors. Muscular activity plays a prominent part in determining the extent of metabolism, and the effects of various diets on it may become of no mean significance. The ingestion of food almost invariably produces some increase in metabolism. It has been found best, therefore, to attempt, in all fundamental measurements in this field, to eliminate the uncertain factor of food stimuli and to exclude as far as possible the element of voluntary muscular exertion. This is accomplished by studying the individual at complete rest and at least twelve hours after a meal.

Benedict and his collaborators have shown in the past that there is a clearly established relationship between the pulse-rate and the total metabolism.² Theoretically, therefore, the ideal condition under which to attempt to secure the minimum or basal metabolism would be at a period when the individual was having the minimum pulse-rate (as well as a body temperature well within normal limits.) In part these ideal requirements have been successfully met in the trials made in various places and compiled by the Boston laboratory. In quoting the figures of most immediate interest to the physician and of direct application to his work we shall not err widely in placing the basal metabolism of fasting man at rest at approximately one calorie per hour per kilogram (2.2 pounds) of body weight—a “round” number easily remembered. Exceptionally small individuals tend to exceed this average, though their requirements per unit of body surface (which Rubner recommends as the proper basis for comparisons) is not so widely divergent from that of larger subjects.

In a practical way this means that when a woman of 50 kg. (110 pounds) or a man of 60 kg. (132 pounds) body-weight is receiving a diet in which the

1. Benedict, F. G.; Enimes, L. H.; Roth, P., and Smith, H. M.: *The Basal Gaseous Metabolism of Normal Men and Women*, Jour. Biol. Chem., 1914, xviii, 139.

2. Pulse-Rate and Metabolism, editorial, *THE JOURNAL A. M. A.*, June 28, 1913, p. 2049.

digestible nutrients do not exceed 1,200 to 1,500 calories in fuel value, they are unquestionably underfed even when at complete rest in bed. And when their energy requirement is increased by the inroads of fever with its stimulation of metabolism,³ or by some degree of bodily activity, as well as by the food factor, higher levels of dietary wants are at once reached. The first step in satisfying any need is to have its extent clearly outlined.

THE ENTRANCE OF THE INFECTIVE AGENT OF EPIDEMIC POLIOMYELITIS INTO THE BODY

For only five years have we definitely known that anterior poliomyelitis must be classed among the acute infectious diseases. In 1909 Landsteiner and Popper reported the successful inoculation of monkeys with the disease, using for inoculation material an emulsion of the spinal cord of a patient who had died in the early stages of the disease.

Since then, notably through the researches of Flexner and his associates in this country, and of Landsteiner, of Levaditi, of Kling, Wernstedt and Petterson and of Römer abroad, many additions have been made to our knowledge of the disease. Especially is this true concerning the nature of the virus, the morbid anatomy and histology of the natural as well as the experimental disease, and the routes by which the virus escapes from the body.

Of especial importance has been the announcement by Noguchi and Flexner of the successful cultivation of the causative organism by the use of special methods of cultivation. Of important public-health interest was the finding of the virus in the nasal mucosa of healthy persons who had been in contact with persons sick with the disease. Such persons or "carriers" undoubtedly play a most important part in the epidemiology of the disease, and, on account of the difficulties connected with their detection, play an equally important part in the spread of the disease wherever such persons may go.

The discovery of the existence of such "carriers" is of more practical importance from the side of the prevention of the disease than was the discovery of the ambulatory cases. The important question of the means of entrance of the virus into the body has been under discussion with no definite conclusion having been reached. The early reports on the transmission of the disease by the stable-fly (*Stomoxys calcitrans*), as reported by Rosenau, indicated that the disease was transmissible by the bite of that fly, but the work of later investigators suggested that the disease was not usually transmitted in that manner. Some workers have steadfastly insisted on the transmission of the disease by contagion, with the nasal mucosa as the

avenue of entrance. Among those who have held such views have been Flexner and his associates, and, in a recent paper, Flexner and Amoss¹ have produced experimental data of a convincing character in support of this view.

They report a large number of experiments showing the affinity between the virus and various organs and tissues, as shown by the infectivity of such organs and tissues from animals in which the virus has been introduced in different ways. It was found that when the virus was injected intravenously it was deposited promptly in the spleen and bone-marrow, but not in the kidneys, spinal cord or brain; and in spite of the affinity between the virus and the nervous tissues, the virus was not removed from the blood by the spinal cord and the brain until the choroid plexus and blood-vessels had suffered injury.

It would appear from their experiments that, although the virus is brought to the nervous tissues by the lymph, the distribution through the nervous system is, in large part, by means of the cerebrospinal fluid.

The authors believe that their experimental evidence supports the view that epidemic poliomyelitis is caused by the entrance into the body of the specific agent through the upper respiratory mucous membrane to the olfactory lobes, from which, by means of the cerebrospinal fluid, it is distributed throughout the nervous organs. They add, however, that in exceptional cases other modes of infection may occur.

Should it be that these authors are correct in their view as to the upper respiratory mucous membrane being the infection atrium, we will have a full explanation of the reason for the failure of efforts to control the disease that have not taken this view into account. Strict isolation of the sick and those who have been in contact with the sick should have a material effect in limiting the spread of the infection.

THE ARMY AND MENTAL DISEASE

The mental anguish, depicted by the numerous tales of suicide, madness and desertion among soldiers, to say nothing of mental frenzy expressing itself in wanton murder, that have come to us from our ill-fated friends across the sea, leads us to realize that there have been made as yet no scientific studies of the effect of war on the minds of officers and enlisted men in the army. Fortunately for our nation, there has been no opportunity to study the effect, on a large body of men, of short rations, loss of sleep, great emotionalism, exhausting exposure, excessive physical exertion, homesickness, etc., yet these in combination produce a strain that might well prove fatal to the equilibrium of many a mind that in regular routine would show no weakness. To be mentally sound in

1. Flexner, Simon, and Amoss, Harold L.: Localization of the Virus of Epidemic Poliomyelitis, Jour. Exper. Med., Sept. 1, 1914, p. 249.

3. Metabolism in Fever, editorial, THE JOURNAL A. M. A., Sept. 19, 1914, p. 1035.

such conditions is of more importance than to pass the eyesight test, or to be typhoid proof.

In the light of modern psychiatry it is rumored that more than one great battle has been lost by a general who was in the early stage of paresis, and doubtless dozens of men who have met the fate of deserters had their doom written in their brains, could their officers have read the signs of dementia praecox. Although the mental effects of war strain have not been studied, our War Department has been carrying on, under the Surgeon-General's advice, a very interesting inquiry concerning the mental status of the army.¹ The studies show that the mentally diseased, and those who are congenitally or otherwise mentally defective, form an important problem in armies and navies.

Of all the discharges for disease or external causes, practically speaking, one-fifth are on account of mental disease in some form. That is to say, out of 1,062 men discharged in 1912 on account of disability from all causes, more than 200 were found to be mentally diseased or defective during the year; and these did not include the retirements for neurasthenia or hysteria, which, although the patients are not insane in the accepted sense, are in reality mental diseases that will seriously affect one's efficiency in time of strain.

Of all the mental diseases, it was found that dementia praecox was by far the most frequent form; it averaged about 56 per cent. each year, of all the dismissals. In addition to these, there is no knowing how many cases there might have been among the soldiers who deserted through the year, or were dishonorably discharged on account of "previous convictions by summary court," or who attempted suicide. Many of them, without doubt had mild or unrecognized cases of dementia praecox.

The report gives a clear, concise outline of the modern conception of dementia praecox, explaining the way in which it may appear in the army in young men who have never shown any of the symptoms of irresponsibility when sheltered by their parents or friends, but who cannot "get along" when they are required to speak, act, and even think in prescribed and orderly fashion.

The symptoms, with the vivid case descriptions that follow, will afford the regular army surgeon much insight into cases that would seem to be merely undisciplined. In fact, the text of this bulletin will be of tremendous social value to every officer, as well as to any one dealing with large bodies of men whether in reform schools, prisons, factories or mines.

In the same clear, concise manner paranoid mental states are treated, also manic depressive psychoses, general paresis, syphilis of the nervous system, arteriosclerotic mental disturbance, hysterical psychosis and the constitutional psychopathic states.

It is interesting to note that the military prisons frequently turn over men who have been convicted for desertion, assault, murder, theft, who were probably at the time suffering from mental diseases that were not recognized until they became so pronounced that the prisoners had to be sent to the Government Hospital for the Insane.

Even despite the advice of experienced alienists, men are condemned to death by jurors, instructed by lawyers who fail to grasp the significance of these peculiar disturbances in the emotional sphere—delusions, hallucinations and sexual perversities. The pages of this bulletin would be excellent reading for the occupants of the jurors' box in a criminal law court; for what holds true of enlisted men matches up in a pretty fair average to men in general.

NEW ASPECTS OF PURIN METABOLISM

The mysterious indefiniteness which was attached, only a few years ago, to the then newly coined word "nuclein" is rapidly disappearing with the advent of new and precise information. The word itself is being abandoned for the expression "nucleoprotein," which is intended to designate the salt-like combinations of protein and nucleic acids.¹ The latter can be disintegrated into a group of well-defined substances—purin and pyrimidin base, sugars, phosphoric acid—which may properly be looked on as the chemical units out of which they are built up, precisely as proteins are constructed out of amino-acid units. The purin bases, adenin and guanin (with their derivatives hypoxanthin and xanthin) have been the subject of exceptional interest because of their precursor relationship to uric acid.

Although the nucleic acids can be split up into these primary groups through the agency of vigorous hydrolytic procedures, Levene and his collaborators in the Rockefeller Institute have shown in a series of brilliant experiments that suitable methods of cleavage may lead to more complex fragments of the nucleic acids. Thus the phosphoric acid may be split off, leaving a residue of purin-sugar or pyrimidin-sugar compounds which have been termed nucleosids.

How are the nucleic acids prepared for absorption in the digestive processes? Are they broken down in alimentation into the simplest fragments, such as the purins, or do more complex groupings, like the nucleosids, arise? The question is analogous to that which has been raised in regard to the proteins, that is, whether they are absorbed in the form of amino-acids or of combinations of the latter in the guise of polypeptids. The phosphoric acid component of the nucleic acid is readily liberated by suitable enzymatic intervention; and the investigations of a number of biochemists who are active in

1. King, E.: *Mental Disease and Defect in United States Troops*, Bull. 5, Dept. of War, Washington, D. C.

1. Compare Jones, W.: *Nucleic Acids, Their Chemical and Physiological Conduct*, Longmans, Green & Co., London, 1914.

this field leave little doubt that intact nucleosids may also arise among the products of fermentative reaction. Indeed, there is reason to believe that successive stages of decreasing chemical complexity can be identified in the digestive hydrolysis of the nucleic acids, precisely as in the case of the proteins or carbohydrates.²

If, then, the possibility of the absorption of nucleosids, as such, must be admitted, the study of their fate in possible contrast with the simpler purins or pyrimidins demands investigation. These glucosid-like compounds of purin and sugar, for example, still represent the structural grouping present in the original nucleic acid molecules. An added interest in them arises from the fact that the free purin bases and particularly adenin, which have hitherto been supposed to represent the products absorbed, are rather insoluble and apparently not devoid of toxic properties.³ Adenosin and guanosin, on the other hand, are fairly soluble and can be injected into man in doses of a gram or more without untoward symptoms. This has been established in von Müller's clinic in Munich by Thannhauser and Bommes.⁴ Furthermore, the injection of these nucleosids is followed by an increase in the output of uric acid, precisely as when nucleoproteins are ingested. A gram of guanosin induced the output of 0.5 gm. of additional uric acid, without any change in the uric acid content of the blood.

These unanticipated results made it appear highly probable that the water-soluble purin-sugar complexes—the nucleosids—may be the precursors of uric acid in the metabolism. It is quite conceivable that deamination and oxidation—both essential steps in the conversion of adenin and guanin into uric acid—take place before the sugar residue is removed from the molecule. Enzymes which can deaminate amino-nucleosids are now known;¹ and the probability of the participation of the nucleosids as such in metabolism is further enhanced by the fact that free adenin is admittedly toxic, and that adenase—the enzyme which deaminates adenin—has been missed in human organs and tissues.¹ To this may be added the indication that the purins circulate in the blood in some form other than the free bases.⁵

The probability that the nucleosids function as the physiologic precursors of uric acid in intermediary metabolism has also been subjected to the test in gouty subjects by the Munich investigators.⁴ In severe cases the injection of the nucleosids (adenosin and guanosin) in 1-gm. doses is not followed by an augmentation in the excretion of uric acid. In milder

cases there is an increase, though greatly delayed. On the other hand, the uric acid content of the blood in the gouty patients is invariably increased by nucleosid injections; and these usually precipitate so-called gouty attacks.

With respect to the theory of gout it is to be noted that the delay in the output of uric acid after nucleosid injections cannot be attributed to a delay in uric acid formation; for the content of the latter in the blood increases very promptly within a few hours. We are thus reminded that it would be a far-fetched hypothesis which would attribute the perversion observed in gout to anything other than a disturbance in the excretion of the uric acid.

THE AMINS IN COMMON FOODS

The amins have of late come into prominence as representative protein decomposition products arising through the action of bacteria on amino-acids. They are formed from the latter by the cleavage of carbon dioxid. Reactions of this type are known to take place under the conditions obtaining in the alimentary tract, though normally amins are not recovered from the intestinal contents or feces in detectable amounts. There are individuals in whom the long-known amins—putrescin (tetramethylendiamin) and cadaverin (pentamethylendiamin), derived from the amino-acids arginin and lysin, respectively—are found in both the feces and the urine. This has been true particularly in cases of cystinuria, though the precise connection between this anomaly and the diaminuria is not understood. It may be that amins arise in the gastrointestinal tract through the action of the bacterial flora more freely than is currently believed, but that after absorption these derivatives are then promptly further decomposed by the body tissues and thus disappear from view. In the light of the fact that some of the amins are physiologically active and many promptly reappear in the urine in some form or other when they are introduced into the organism directly, it seems more probable that under the usual conditions of alimentation amins are not formed in such conspicuous quantities.

A more recent accession to the list of possible amins arising in the intestinal canal is beta-imidazolyethylamin, which can be produced from histidin through the agency of bacteria found in the bowel and which may possibly also be a product of cellular activity. The occasion for this statement is the observation that extracts of various tissues produce physiologic effects quite comparable with that incited by administration of this amin. This is particularly true of extracts of the hypophysis, which seems to elaborate products related to the amins. From the amino-acid tryptophan, indolethylamin is obtainable. The amins may exhibit a more or less pronounced influence on the animal organism. They stimulate the sympathetic nervous

2. Compare Thannhauser, S. J.: Experimentelle Studien über den Nucleinstoffwechsel. I. Mitteilung. Verdauung der Hefenucleinsäure durch menschlichen Duodenalsaft. Isolierung der Triphosphonucleinsäure, *Ztschr. f. physiol. Chem.*, 1914, xci, 329.

3. Compare Minkowski, O.: *Arch. f. exper. Path. u. Pharmacol.*, 1898, xli, 406.

4. Thannhauser, S. J., and Bommes, A.: Experimentelle Studien über den Nucleinstoffwechsel. II. Mitteilung. Stoffwechselversuche mit Adenosin und Guanosin, *Ztschr. f. physiol. Chem.*, 1914, xci, 336.

5. Bass, R.: *Arch. f. exper. Path. u. Pharmacol.*, 1914, lxxvi, 40.

system. Some of them compare with epinephrin in producing contraction of the arterioles and consequent rise in blood-pressure. Some of them, like imidazolyethylamin, markedly stimulate the involuntary muscles, notably those of the uterus. A further member of the group, oxyphenylethylamin, derived from the amino-acid tyrosin, has been identified as an active constituent of ergot.

There can be little doubt that since theamins are, under suitable conditions, characteristic products of bacterial action on proteins, small quantities are not only presumably formed in the bowel, but may frequently be present in food. It is, however, somewhat surprising to learn from competent authority that they occur regularly and in not inconsiderable quantity in so common a food as cheese. Oxyphenylethylamin had earlier been isolated in very small amounts from overripe Emmenthal cheese by Winterstein and Küng,¹ and even before that in detectable amounts from American cheddar cheese by Van Slyke and Hart.²

Now, however, Ehrlich and Lange³ have easily separated the same amin in amounts corresponding to 0.06 per cent. of the fresh product from Swiss cheese of the finest edible quality; and they regard it as a regularly recurring constituent. There is no question that the amin owes its origin to the bacterial processes associated with the usual ripening of the cheese; in fact, the product is readily produced from tyrosin in suitable culture mediums by the action of bacteria isolated from cheese. Other types of cheese—the Camembert, Roquefort and Emmenthal varieties, for example—all yield the same amin.

The demonstration of the regular occurrence in foods of a compound which has a marked blood-pressure-raising potency and is identical with one of the toxic bases which lend a pharmacologic action to ergot⁴ is of more than passing interest. One is reminded anew of the possibilities described in a general way as alimentary toxemia. There can no longer be any doubt that the foods we eat may contain preformed some of the physiologically active products which have hitherto been charged solely to the bacterial transformations initiated in the digestive canal by supposedly abnormal flora.

1. Winterstein, E., and Kung, A.: Ueber das Auftreten von p-Oxyphenyläthylamin im Emmentaler Kase, IV. Mitteilung, Ztschr. f. physiol. Chem., 1909, lix, 138.

2. Van Slyke, L. L., and Hart, E. B.: New York Agricultural Exper. Station, Bull. 231, 1903.

3. Ehrlich, F., and Lange, F.: Zur Kenntnis der Biochemie der Käse-reifung, I. Ueber das Vorkommen von p-Oxyphenyläthylamin im normalen Kase und seine Bildung durch Milchsäurebakterien, Biochem. Ztschr., 1914, lxi, 156.

4. The Active Principles of Ergot, editorial, THE JOURNAL A. M. A., June 20, 1914, p. 1969.

Susceptibility to Disease as Atavism.—The special vulnerability shown at times by certain tissues or cells as regards bacteria which at ordinary times do not trouble them may, perhaps, be looked on (apart from the occasions when it comes from a temporarily heightened virulence of these bacteria) as a reversion to a period in the individual or racial history prior to that at which immunity to these bacteria was acquired.—A. J. Brock, *Edinburgh Med. Jour.*

Current Comment

HIGHER DEGREES IN MEDICINE

Attention has previously been called¹ to a two-year graduate course offered by the University of Minnesota for the training of physicians who desire to specialize in ophthalmology. It was also shown that this course was a parallel to the graduate courses offered by several high-grade medical schools² for the training of health officers. In both courses those who expect to obtain the degree are required to have graduated from a medical college; in both instances definite, carefully planned courses of study have been laid down, and such higher degrees as are granted will hold a distinct educational value. Meanwhile, in these courses, instead of devoting his time exclusively to clinical work, the physician will also secure a thorough knowledge of the fundamental facts of anatomy, physiology, chemistry, pathology and the like, which have a direct bearing on his chosen specialty. Nowhere can such graduate courses be so carefully planned or so well given as in universities which are also equipped to give thoroughly the undergraduate medical courses. It is quite probable that following the example of these courses in public health and ophthalmology, similar courses will be established to prepare those who wish to limit their practice to the other specialties of medicine. It is highly important, therefore, that care be used in deciding what degree is to be granted in each of these specialties. A great multiplicity of higher degrees in medicine would lead to their being confused with the worthless lot now being granted by the innumerable drugless sects and fads. The University of Minnesota has shown wisdom, therefore, in providing one higher degree for all, that of Doctor of Science (Sc.D.), the particular specialty to be designated by adding the words "in surgery," "in ophthalmology," etc. Meanwhile, the establishing of these special graduate courses in high-grade universities points to a new field in which there are great opportunities for the development of medical education.

REGIONAL VARIATIONS IN THE CONTRACTIONS OF THE SMALL INTESTINE

A careful observation sometimes upsets preconceived notions in science by centering attention on facts which cannot be reconciled with current views. An illustration of this has been furnished by Alvarez in the physiologic laboratory of the Harvard Medical School.³ It is commonly believed that the small intestine is a tube of uniform properties throughout. Alvarez was accordingly surprised to find that when comparable segments from different parts of this portion of the bowel were allowed to contract rhythmically in a suitable medium under identical external con-

1. Special Training for the Specialist, Current Comment, THE JOURNAL A. M. A., June 20, 1914, p. 1972.

2. Harvard University, the Universities of Pennsylvania, Michigan and Wisconsin, the University of New York, Tulane University and now the University of Minnesota have established courses in public health leading to the degree of Doctor of Public Health.

3. Alvarez, W. C.: Functional Variations in Contractions of Different Parts of the Small Intestine, Am. Jour. Physiol., 1914, xxxv, 177.

ditions, the rhythm of the upper end of the small bowel was decidedly greater than that of the lower. The rate, roughly expressed, varies inversely as the distance of the selected segment from the pylorus. The oral end of an intestinal loop beats with more regular rhythm and amplitude than the aboral portion. The amplitude of contraction of segments with approximately the same length is greater with segments from the ileum than with those from the duodenum. According to Alvarez the more rapid rhythm and the smaller amplitude of duodenal segments are apparently associated with a greater tone of this region compared with the lower ileum. The duodenal region is more irritable to mechanical and thermal stimulation than the lower parts of the small intestine; and it is suggested that the greater tone and irritability and the faster rhythm of the upper part are associated with more rapid peristalsis in this region.

INHERITED DEFECTS ATTRIBUTABLE TO ALCOHOL

The influence of alcohol as a detrimental factor in inheritance is one which has not readily lent itself to convincing experimental proof in the past. During the last four years Professor Stockard of the Cornell University Medical School in New York City has been engaged in a study of the effects of alcohol in heredity. He has demonstrated conclusively that the germ cells of males can be so injured by allowing the individuals to inhale the fumes of alcohol that they give rise to defective offspring although mated with vigorous untreated females.¹ The extension of these unique investigations, in which the offspring from the treated animals which reach maturity are usually nervous and slightly undersized, have further shown that the effect of the injury of the germ cells is not only exhibited by the immediate offspring of alcoholized animals, but is conveyed through their descendants for at least three generations.² There are many instances of matings followed by negative results or early abortions, stillborn young or defectives. An instructive illustration was afforded in a case in which two of the four young were completely eyeless, the eyeballs, optic nerves, and chiasma being absent. Such defects result, according to Stockard, from the injury originally inflicted on the germ cells by the experimental treatment. Yet this injury may have been received by earlier generations only. Thus the parents of the anophthalmic guinea-pigs just mentioned were untreated, their four grandparents were also untreated, but their great-grandfathers were all alcoholized and their great-grandmothers were all normal animals. The defective eyes of descendants are due to impaired development, not to the direct action of alcohol. Plainly the spermatozoön is actually weakened, if not disabled by the alcohol treatment and all individuals arising from combinations involving such a germ cell are likely to be below normal. There is food for reflection in these facts.

1. Stockard, C. R.: Arch. f. Entwicklungsmechn. d. Organ., 1912, xxxv; Arch. Int. Med., 1912, x, 369; Am. Naturalist, 1913, xlvii.
2. Stockard, C. R.: A Study of Further Generations of Mammals from Ancestors Treated with Alcohol, Proc. Soc. Exper. Biol. and Med., 1914, xi, 136.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARKANSAS

Pellagra at State Hospital for Nervous Diseases.—According to the current monthly report of the State Hospital for Nervous Diseases, Little Rock, thirteen of the thirty-four deaths occurring during August were due to pellagra. It is said that there are more than seventy-five cases of the disease at the hospital.

Personal.—Dr. Owen K. Haydon, Conway, has gone to Europe as a member of the medical staff of the American Red Cross.—Dr. Robert E. Weaver, Hope, has been appointed house surgeon in the Missouri Pacific-Iron Mountain Hospital, St. Louis.—Dr. Chester Jennings, Little Rock, who has been seriously ill with cerebral hemorrhage, is reported to be improving.

Hookworm in Arkansas.—Dr. Charles W. Garrison, Little Rock, state director of the Rockefeller Hookworm Commission in Arkansas, reports that during the quarter ended September 30, the commission made 6,433 examinations, finding 895 infections with intestinal parasites of which 738 were infections with hookworm. The percentages of infection in the counties in which the work was carried on during the past quarter were the following: Crittenden, 19.9, Drew 15, Greene 13.8, Madison 6, Marion 25.3, Montgomery 12.9, Polk 10.9, Scott 6.7, Van Buren 16.9 and Chicot 3.8. Since coming into the state four years ago, the commission has made 49,961 examinations at a cost of about \$60,000 and has found over 10,000 cases of infection. Dr. Tillman B. Bradford, Cotton Plant, began work in Searcy County October 5, and will remain about four weeks, visiting the rural schools of the county, and making his headquarters at Marshall.

COLORADO

Home from Abroad.—Dr. Oscar J. Pfeiffer and Dr. and Mrs. James Rae Arneill, Denver, have returned from abroad.

Dr. Work Wins Senatorial Nomination.—The returns of the state canvassing board show that Dr. Hubert Work, Pueblo, Republican candidate for United States Senator, received 22,413 votes, a plurality of 6,100.

DISTRICT OF COLUMBIA

Personal.—Drs. William Cline Borden and John H. Selby, Washington, have returned from abroad.—Col. Champe C. McCulloch of the Medical Corps of the Army, has purchased a residence at 1831 Lamont Street.

Urge Leper's Removal.—The commissioners of the District of Columbia have requested the Secretary of the Treasury, who has supervision of the United States Public Health Service, to take steps for the immediate removal from the district, of the burden of caring for John R. Early, leper, who returned to the district from the United States Quarantine Station at Diamond Head, Wash., in June last. Action is asked by the commission on the ground that Early never was a resident of the district and has no claim whatever on the government.

GEORGIA

New Officers.—Eighth District Medical Association at Athens, September 24: president, Dr. Daniel H. DuPree; secretary, Dr. Edward M. Coleman, both of Athens. The next meeting of the association will be held at Franklin Springs.

Personal.—Dr. David B. Hawkins, Atlanta, has started for Europe to work under the American Red Cross.—Dr. Harry R. Slack, Jr., La Grange, has been appointed a Red Cross staff surgeon and sailed for Europe September 5.—Dr. Emory R. Park, Atlanta, and Dr. Samuel Brock, Carrollton, have returned from abroad.

Hospital Plans Accepted.—Plans for the proposed Georgia Baptist Hospital, Atlanta, have been approved by the special committee of trustees and it is expected that work will begin soon after November 15. The plans call for a building to accommodate 500 patients and will cost about \$500,000. The building will cover an entire block and will be made up of five units, each having accommodations for 100 patients.

ILLINOIS

Streptococcus Sore Throat.—The Illinois Board of Health has sent experts to Carbondale to investigate an epidemic of streptococcus sore throat, of which infected milk is supposed to be the cause.

Personal.—Dr. Vincent J. Cohenour, Joliet, has been elected physician of Will County.—Dr. Wilmot L. Ransom, formerly proprietor of the Ransom Sanitarium, Rockford, has established a new sanitarium at Roscoe.

Infantile Paralysis Epidemic Under Control.—The epidemic of infantile paralysis on the North Shore appears to have spent itself, no new cases having been reported recently. Strict measures are being taken to prevent any further spread of the disease.

IOWA

Home from Abroad.—Dr. and Mrs. Charles Ramage, Charles City; Dr. Elmer Weih, West Liberty, and Dr. Bert A. Bowers and family, Granville, have returned from abroad.

Clinical Laboratory Opened.—The clinical laboratory of Mercy Hospital, Davenport, installed at a cost of \$3,000, has been opened and is in charge of Dr. F. H. Lamb, formerly of Ann Arbor, Mich.

State Board Bulletins.—The Iowa State Board of Health has issued special bulletins for general distribution, one on small-pox, setting forth the necessity of vaccination, and another on the health and care of babies.

KANSAS

Personal.—Dr. John C. Rudolph, Lawrence, has returned from Europe.—Dr. Franklin P. Hatfield, Olathe, has been appointed physician for the State Deaf and Dumb School in that city.

To Revise Medical Laws.—At the request of the Kansas State Medical Society, the governor has appointed the following committee to revise the medical laws of the state of Kansas and recommend changes to be brought before the next legislature: Dr. James Milligan, Garnett; Dr. Joseph E. Sawtell, Kansas City, and Messrs. W. L. Burdick, Lawrence; Fred Dumont Smith, Hutchinson, and F. T. Ransom, Wichita. The society in its letter to the governor declared that the Kansas laws having a bearing on the practice of medicine, are "inadequate, contradictory and confusing."

KENTUCKY

Personal.—Dr. Ernest Rau has succeeded Dr. Garland E. Huddle as health officer of Bowling Green.—Dr. Joseph N. McCormack, Bowling Green, who has been under treatment at Rochester, Minn., has returned home recovered.

Small-Pox Patients Lack Vaccination.—Of 714 cases of small-pox at the Louisville Eruptive Hospital during the year ended August 31, but one resulted fatally. The superintendent of the hospital calls attention to the fact that 99 per cent. of the small-pox patients received at the hospital had never been vaccinated or had been vaccinated without result.

University of Louisville Opens.—The Medical Department of the University of Louisville began its seventy-eighth annual session and its first year under the new régime, with a special program, September 28. The laboratories of the institution have been reequipped. The laboratories of pathology and clinical microscopy are maintained at the City Hospital under the direct charge of Dr. F. S. Graves, chief pathologist of that institution. The libraries of Dr. James M. Bodine and the late Dr. James B. Marvin have recently been added to the library of the institution which now numbers about five thousand volumes and is open during the entire day for the use of the medical profession.

Trachoma Clinic at Oneida.—Drs. Joseph A. Stucky and Samuel B. Marks, Lexington; Louie E. V. Stegman, Battle Creek, Mich., and C. Adaline McConville, Brooklyn, N. Y., with the assistance of the county physicians and local officials and several nurses, held a clinic for trachoma and other diseases during the week ending October 3 at Oneida, Clay County, in the heart of the eastern Kentucky mountains. Fully 300 patients were examined, twenty-six operations performed and nine lectures delivered. A well-equipped little hospital has been established at Oneida, but arrangements have been made for a larger hospital building. Dr. McConville has remained at Oneida to assist in the work for some time.

New Officers for State Society.—At the sixty-fifth annual meeting of the Kentucky State Medical Association held at

Blue Grass Inn, Newport, September 22 to 25, the following officers were elected: president-elect, Dr. James W. Kincaid, Catlettsburg; vice-president, Dr. Frederick G. LaRue, Smithland; Dr. Charles L. Heath, Lindsey, and Dr. James C. Mobley, Elizabethtown; delegates to the American Medical Association, Drs. Milton Board, Louisville, and Arthur T. McCormack, Bowling Green; councilors, seventh district, Drs. Achilles W. Cain, Somerset; ninth district, Dr. Albert S. Brady, Greenup, and eleventh district, Dr. James S. Lock, Barbourville; orator in medicine, Dr. O. P. Nuckols, Pineville, and orator in surgery, Dr. Joseph G. Gaither, Hopkinsville. Louisville was selected as the next meeting place.

MARYLAND

Johns Hopkins' Anniversary.—The twenty-fifth anniversary of Johns Hopkins Hospital opened with a meeting at the Lyric on October 5. During the celebration an inspection of the Brady Urological Clinic, of which Dr. Hugh H. Young, Baltimore, is director, was made. This clinic is a gift of Mr. James Buchanan Brady of New York, and is the only one of its kind in this country. Tablets to Dr. Daniel C. Gilman, president of the university and organizer of the hospital, and to Dr. John Hewetson were dedicated and a portrait of Sir William Osler, by Sargeant, was presented.

Disease Prevention.—The Federated Charities, Instructive Visiting Nurses' Association, Tuberculosis Division of the Health Department, Babies' Milk Fund Association and Johns Hopkins Hospital Social Service Department, have completed arrangements for a course of public lectures to begin November 4 and continue to March 31. The scope of the lectures will include public health, the family, labor conditions, domestic science, children, social bearing on mental diseases, social treatment of specific diseases, pulmonary tuberculosis and diseases of the eye resulting from bad social conditions.

MINNESOTA

Windom Site Accepted.—The State Advisory Board has approved the selection of the Windom site for a district tuberculosis sanatorium.

School Inspectors Appointed.—Drs. Frank A. Grawn, John H. Andres and Murdoch A. Nicholson have been appointed medical inspectors of the public schools of Duluth.

Hospital Staff Appointed.—Dr. Herbert O. Collins, city physician of Minneapolis, has announced the general staff of the Minneapolis City Hospital. Under arrangements with the faculty of the University of Minnesota, one-half of the staff are members of the medical faculty and the other half are practitioners not affiliated with the school of medicine.

Sanitary Conference.—At the joint session of the Minnesota Sanitary Conference and the Minnesota Public Health Association held in St. Paul, September 30, the following officers were elected: The Minnesota Sanitary Conference, president, Dr. Ignatius J. Murphy, Duluth; vice-president, Dr. Emery H. Bayley, Lake City; secretary, Dr. Albert J. Chesley, Minneapolis.

Personal.—Dr. Samuel M. Kirk, St. Paul, has been obliged to give up his practice and is taking a long rest on a ranch near Arbsarabee, Mont.—Drs. William A. Jones and Carl J. Ringnell, Minneapolis, have returned from abroad.—Dr. Harold E. Robertson, Minneapolis, has been appointed bacteriologist to a hospital in Berlin.—Dr. John W. Lee, Minneapolis, has arrived in London from Vienna.

State Association Meeting.—The annual meeting of the Minnesota State Medical Association was held in St. Paul, September 30 to October 2, under the presidency of Dr. Alfred E. Spalding, Luverne, and the following officers were elected: president, Dr. John T. Rogers, St. Paul; vice-presidents, Drs. Lemuel M. Roberts, Little Falls; and Edwin S. Muir, Winona; secretary, Dr. Thomas S. McDavitt, St. Paul (reelected); treasurer, Dr. Earle R. Hare, Minneapolis; councilors, Drs. Frank R. Weiser, Windom; and Hugh F. McGaughey, Winona. Rochester was selected as the place of meeting for 1915.

MISSOURI

Personal.—Dr. Mazyck P. Ravenel, Madison, has assumed the duties of his new position as professor of preventive medicine at the University of Missouri, Columbia.

NEW JERSEY

Personal.—Dr. Fred M. Corwin has been reappointed medical inspector of the public schools of Bayonne.—Dr. Joseph S. Nicholson, Camden, is reported to be ill with pneumonia.

—Dr. Albert S. Harden has been appointed health commissioner of Newark.

Diphtheria Epidemic Checked.—Strict quarantine is believed by Riverside health officials to have checked the spread of an epidemic of diphtheria that caused the closing of the public school September 23. The boards of health and education decided, however, to keep the schools closed as long as necessary.

NEW YORK

Hospital for Children in Rochester.—A proposed certificate of incorporation for a children's hospital of Rochester, N. Y., has been sent to the State Board of Charities for approval. The following are named as directors of the proposed hospital: Drs. Montgomery E. Leary and John M. Lee; and Messrs. Clarence A. Barbour, Henry T. Williams and Michael J. O'Brien.

Personal.—Dr. Wilhelm Gaertner, Buffalo, has been appointed by the governor a member of the Public Health Council of the state to fill the vacancy caused by the resignation of Dr. Edward Clark who has been appointed state sanitary supervisor. —Mr. Garnet Smith, executive secretary of the Children's Welfare Association, New York City, has been appointed secretary of the Rochester Public Health Association. —Dr. Albert E. Mott, Akron, announces his retirement from the practice of medicine. He will reside in Canada. —Dr. Milton H. Goldberg, Buffalo, has returned from abroad.

Schick Test in a Diphtheria Outbreak.—During the months of April and May there was an outbreak of diphtheria at the Howard Orphanage at Kings Park, L. I., where there are about 260 children. Among the measures used for the suppression of the disease were the Schick test for the purpose of determining susceptibility of the children and the removal of tonsils and adenoids from carriers. From the epidemic the following conclusions were drawn:

1. The Schick test is of great value in detecting susceptible persons in an epidemic of diphtheria.
2. One thousand units of antitoxin usually afford protection for from 21 to 28 days, while a second dose, as a rule, protects for only about a week, as shown by the Schick test.
3. The indications of the Schick test are that the immunity conferred by an attack of diphtheria is usually of short duration.
4. The removal of adenoids and diseased tonsils is a valuable means of freeing diphtheria carriers from the germs.

New York City

Ship Held in Quarantine.—The Italian freight steamer, *Cerea*, which arrived from Italian ports October 2, has been detained at quarantine until the health officer of the port may be assured that the vessel is free from all suspicion of Asiatic cholera.

Surgeons for France.—The last of the surgeons whom it will be possible to send to France with the \$1,000 supplied for that purpose by the Duchess of Talleyrand have been selected. Dr. David E. Wheeler sailed October 7 and those who will follow on October 17, are Dr. A. S. Cook, Dr. Thomas Nisbet, an intern in the French Hospital; Dr. S. C. Moore, an intern in Gouveneur Hospital; Dr. H. L. Cookingham of Red Bank, N. J., and one other.

No Quarantinable Disease Admitted to New York.—The annual report of Dr. Joseph O'Connell, Health Officer of the Port of New York, for the year ended September 30, shows that not a single case of quarantinable disease was admitted during the year. The department removed 571 patients from ships and 4,342 persons who had been exposed to quarantinable disease were held for observation. From 13 ships, 20 cases of typhoid fever were removed and treated with 18 recoveries. On account of the presence of plague in Havana, Santiago and New Orleans, the department fumigated during the year about 997 vessels for the destruction of rats.

Personal.—Dr. Benjamin White, formerly director of the department of bacteriology of the Hoagland Laboratory, Brooklyn, is now assistant director of bacteriological laboratories of the department of health, New York City, and is in charge of the Research and Antitoxin laboratories at Otisville. —Dr. Harold Lyall, formerly associate director of the department of bacteriology of the Hoagland Laboratory, is now bacteriologist at the Research and Antitoxin laboratories, Otisville. —Dr. William H. Allen, director of the Bureau of Municipal Research, has resigned. —Dr. Paul B. Clark, of the Rockefeller Institute for Medical Research, has been appointed associate professor of bacteriology in the University of Wisconsin, succeeding Dr. Mazyck P. Ravenel. —Dr. H. McDonald Peggs has gone to Europe to make a

reconnaissance in the war zone for the British Imperial Club. He goes first to England and then to the front to learn what surgeons, nurses and supplies are needed. The club will send what is recommended. Dr. Peggs then expects to serve with the British hospital corps. —Dr. John Raverswood Hicks, New Brighton, has accepted Dr. Hermann M. Bigg's request to help organize local health work on such lines as promise a maximum return for a given amount of money expended. Dr. Biggs believes that before such an adjustment can be effected it will be necessary to secure some uniformity in health department accounting, so that the expenditures for various purposes in various communities may be fairly compared. —Dr. E. C. Baldwin of Ft. Wadsworth, bacteriologist and director of the old laboratory at the Quarantine Station, has resigned in favor of Dr. Oscar Teague, recently of Cornell.

OHIO

Hospital Reopened.—The Children's Hospital, Columbus, which was closed in August for renovation and improvements, was reopened October 1.

New County Society.—Through the efforts of local physicians of New Philadelphia, the Carroll County Medical Society was organized at Carrollton, September 17.

Personal.—Drs. Charles Sidney Smith, Frederick K. Kislig and Elmer R. Arn have been appointed assistants on the senior surgical staff of the Miami Valley Hospital, Dayton. —Dr. William B. Bryant has been appointed assistant on the senior medical staff of the same institution. —Dr. Evan Cameron, Elyria, coroner of Lorain County, is seriously ill with pneumonia at the Memorial Hospital. —Dr. William H. Stover, Tiffin, after more than forty years of active practice, has moved to Toledo. —Dr. Elza A. Dye, Springfield, is reported to be seriously ill in the Springfield City Hospital. —Dr. Mark Milliken, Hamilton, who has been seriously ill in the Mercy Hospital, Hamilton, with septicemia, is reported to be convalescent.

Cincinnati

Health Officer Meets Emergency.—Cincinnati, through the quick action of Dr. John H. Landis, health officer, has demonstrated the efficiency of a first-class health department to successfully meet a grave emergency. This city is separated by the Ohio River from several municipalities situated on the southern bank of the river in Kentucky. These municipalities include the cities of Newport and Covington. Ludlow, one of these communities, suffered an epidemic of scarlet fever, several hundred of its children being infected. These little ones were permitted to play on the streets, and quarantine of the residents concerned was made in only a few cases, because the local health officer did not grasp the situation. Several of the Ludlow physicians appealed to the Cincinnati Board of Health for relief. On determining the facts Dr. Landis notified the Ludlow authorities he would take measures to quarantine the State of Kentucky from Cincinnati unless the City of Ludlow proceeded to cure itself. In many essentials the people of Cincinnati and those of these adjoining Kentucky municipalities are one. Naturally there was a protest from Kentucky, and the Health Board of Ludlow was descended on by its neighboring cities and villages, and, by pressure of public opinion, Ludlow was made to act promptly. The plan of Dr. Landis was to take possession of the bridges crossing the Ohio at these points, and if necessary to invoke the aid of the state militia through the State Board of Health, in order to accomplish the purposes of this phase of the campaign for health. His maneuver of threatening to quarantine the State of Kentucky from Cincinnati proved to be an admirable bit of strategy.

PENNSYLVANIA

Personal.—Dr. G. F. Bretz, who has been seriously ill at the Pottsville Hospital, has returned and is reported to be convalescent at his home. —Dr. Edward A. McLane, chief resident physician at the Scranton State Hospital, has resigned, to take effect October 31, and will take up private practice in Scranton.

Jewish Sanatorium Dedicated.—The new buildings of the Philadelphia Sanatorium for consumptives at Eaglesville were dedicated October 4. The ceremonies were presided over by Louis Gerstley, president of the institution, and the principal address was made by Dr. Martin G. Brumbaugh, Republican candidate for governor. The new buildings were erected at a cost of \$30,000 and will increase the capacity of the institution from 72 to 100 patients.

Philadelphia

General Wood the Guest of Honor.—The Medical Club of Philadelphia gave a reception at the Bellevue-Stratford Hotel, October 16, in honor of Major General Leonard Wood, U. S. Army.

Enforced Vaccination at University.—More than 250 students in the evening school at the University of Pennsylvania have been notified to leave unless they produce certificates showing they have been vaccinated.

To Prevent Defective Hearing.—As nearly 3 per cent. of the children of school age have defective hearing the Department of Public Health and Charities is issuing a bulletin urging parents to carry out the instructions of school medical inspectors when they report that a child has defective hearing.

War Zone Scenes Narrated.—A meeting of the Philadelphia Clinical Association, October 5 was devoted to the "War Victim Social Evening," in which Drs. James C. Anders, Edward E. Montgomery, Henry W. Cattell and Wendell Reber detailed their experiences in Europe since the outbreak of the war.

Moving Pictures for the County Society.—The possibility of moving pictures as an aid to diagnosis and investigation of disease was demonstrated at a meeting of the Philadelphia County Medical Society at the Academy of Natural Sciences, October 14. Views of patients and of microscopic life, truly representing objective symptoms of several diseases, were shown.

Philadelphia Hospital Modernization Assured.—The inclusion of an item for one million dollars for improvement of Philadelphia General Hospital, in the new loan bill for \$11,500,000 just passed by councils and signed by the mayor, means the definite and early change of the city's great charity into one of the world's models for treatment and teaching purposes. At least 3,000 beds are in view for this notable object.

Instructions for Mothers in Street Signs.—Street signs educating mothers in the care of their children and spreading the doctrine of personal and civic hygiene will be adopted as a new educational method by the Child Federation, which held its first annual meeting at the Bellevue-Stratford. As it is difficult for the mother sitting on her doorstep to be reached by boards of health and private agencies, it is planned to place 300 iron frames in conspicuous places in back alleys and courts of the city. Signs will be printed to fit in these frames that will deal with health topics and give seasonal warning to mothers.

Typhoid in South Philadelphia Due to Political Greed.—Because the political machine values a few petty jobs more than the health of a residential section, South Philadelphia is forced to live in conditions which breed typhoid fever cases. According to the report of Chief Davis of the Water Bureau, since January 1 there have been 208 cases of typhoid fever in downtown wards, 1st, 2d, 3d, 4th, 5th, 7th, 8th, 26th, 30th, 36th, 39th and 48th. In the same period there have been only 309 cases in all the rest of the city. To wipe out the conditions which make this state of affairs possible the legislature was induced to pass a law creating the division of housing and sanitation in the Bureau of Health. The necessary appropriations have been denied by the political machine courtiers, despite the fact that the courts on several occasions have practically ordered councils to act. For more than sixty years private owners in these areas have waited for the city to build sewers. They have paid taxes on these unsewered properties only to see city councils appropriate funds for improvements in undeveloped areas.

SOUTH CAROLINA

Malaria and Pellagra Made Reportable.—The Greenville board of health has decided to place malaria and pellagra among reportable diseases.

Banquet to New York Philanthropist.—The Spartanburg County Medical Society and citizens of Spartanburg gave a buffet supper, September 22, in honor of Col. Robert M. Thompson, New York City, of the Thompson-McFadden Pellagra Commission, the principal contributor to the maintenance of the commission.

Infant Mortality Should be Reduced.—The most recent bulletin issued by the Committee on Health and Public Inspection of the South Carolina Medical Association, deals with infant mortality and the ways and means of reducing the excessive death-rate of infants under 1 year of age.

Medical Examination of Schoolchildren.—The superintendent of schools at Aberdeen has been authorized to have all children medically examined before admission to school. Those who wish may be examined by their family physicians, or they may be examined free at the schools. No child will be admitted without examination.

UTAH

Personal.—Dr. Abraham Fernlund, Ogden, has recovered from his recent severe illness.—Dr. Ernest D. Hammond, Salt Lake City, has been elected president of the Utah Baptist Association.

New State Officers.—At the twentieth annual meeting of the Utah State Medical Association held in Salt Lake City, September 29 and 30, the following officers were elected: president, Dr. Robert S. Joyce, Ogden; vice-presidents, Drs. John W. Aird, Provo; Edward I. Rich, Ogden, and Lashbrook B. Laker, Eureka; secretary, William Brown Ewing, Salt Lake City (reelected); treasurer, Howard P. Kirtley, Salt Lake City (reelected), and councilors, Dr. Eugene H. Smith, Ogden, first district, and Dr. Thomas C. Gibson, Salt Lake City, second district. Salt Lake City was chosen as the meeting-place for 1915.

WISCONSIN

Home from Abroad.—Dr. and Mrs. Frank J. Wochos, Kewaunee; Dr. Wm. Weber Kelly, Dr. Richard C. Buchanan and James P. Lenfesty, De Pere, have returned from abroad.—Dr. Mathias A. Lee, Superior, has arrived in London on his way from Vienna.

Women Physicians Elect Officers.—At the annual meeting of the Wisconsin Medical Women's Society held in Oshkosh, October 6 and 7, the following officers were elected: president, Dr. Carrie A. Frost, Chippewa Falls; vice-president, Dr. Mary Houck, LaCrosse; secretary, Dr. Helen A. Binnie, Poynette; and treasurer, Dr. Maude F. Pratt, Appleton.

Advocates Free Dispensaries.—Health Commissioner George C. Ruhland of Milwaukee is planning to establish a series of free public dispensaries in the school buildings of the city where citizens may take physical examinations annually or at frequent intervals. The purpose of these dispensaries is to protect the public health by detecting physical illness in its incipient stages.

Sanatorium Notes.—Work on the construction of the Winnebago County Sanatorium, Oshkosh, is advancing so rapidly that it is expected that the institution will be in readiness for occupancy early in February.—Dr. John W. Coon, superintendent of the State Sanatorium, Wales, in his annual report, asks for new buildings and other expenditures which will enable the state to expand the work of the institution to the needed scope.

State Society Meeting.—At the annual meeting of the State Medical Society of Wisconsin held in Oshkosh October 7 to 9, the following officers were elected: president, Dr. Theodore J. Reddings, Marinette; vice-presidents, Drs. Hoyt E. Dearholt, Milwaukee; Spencer D. Beebe, Sparta, and Henry W. Morgenroth, Oshkosh; delegates to the American Medical Association, Drs. Alfred H. Levings, Milwaukee, and John F. Pember, Janesville; and committee on public policy and legislation, Dr. Joseph P. McMahon, Milwaukee; Charles S. Sheldon, Madison, and John J. McGovern, Milwaukee.

Personal.—Dr. Samuel D. Huntington, Milwaukee, who stabbed himself in the breast with a scalpel recently, is reported to be improving.—Dr. William W. Witcpalek, Collins, recently underwent an operation at Manitowoc.—Dr. Frank A. McJunkin, successor to Dr. A. F. Boretta, deceased, as director of pathology and bacteriology of the Marquette University School of Medicine, has arrived from Boston and assumed the duties of his position.—Dr. Michael A. Cunningham, Janesville, is reported to be ill with diphtheria.

CANADA

Toronto Academy of Medicine.—The first open meeting of the Academy of Medicine, Toronto, for the season 1914-1915, was held October 6, when Dr. Harry B. Anderson delivered the annual presidential address and Dr. Lewis Gregory Cole of New York City, gave a most interesting and instructing paper on "Roentgenologic Diagnosis of Lesions of the Gastro-Intestinal Tract," illustrated with lantern slides and cinematographic demonstrations.

Checking Pollution of the Great Lakes.—The International Waterways Commission is holding a sitting in Ottawa and is dealing with the levels of the Lake of the Woods and the pollution of international waters. As the source and extent

of this pollution was investigated some time ago, from municipalities and steamers, the meeting is to determine a remedy. This will then be submitted to the United States and Canadian governments.

Ontario to Regulate Slaughter-Houses.—The Provincial Health Board of Ontario is bringing all rural and municipal slaughter houses under strict regulation and inspection. Hereafter before any one can construct a slaughter-house in Ontario the plans and specifications must be approved by the Board of Health. The board is determined to stop the handling of meat by dirty employees. No person affected with tuberculosis or other communicable disease will be permitted to be employed at or in any department where meat is handled.

Quebec Physicians Contribute to Patriotic Fund.—The College of Physicians and Surgeons of the province of Quebec at its recent meeting donated \$1,000 to the Canadian Patriotic Fund. It also decided to allow final students in medicine going to the war, exemption from study during such period. Dr. Art A. Simard, Quebec, was elected president, and Dr. Henri A. LaFluer, Montreal, first vice-president. Notice was given of motion to reduce the number of representatives from 41 to 21 and this will be brought up at the next regular meeting.

Personal.—Dr. John George Adami, Montreal, has enlisted as a private in the McGill University Battalion.—Majors Edward A. LeBel and Robert P. Wright and Captains Conrad G. Geggie and Robert Mayrand, Quebec, have volunteered for service in Europe.—Sir Edward S. Worthington, R.A.M.C., surgeon and medical aide to the Duke of Connaught, the Governor General of Canada, has started for England.—Dr. Andrew A. Fletcher has arrived at Toronto from Germany.—Dr. G. B. Archer, medical missionary from India, is in Toronto.—Dr. O. R. Avison, formerly of Toronto, but for several years a medical missionary in Korea where he superintends a large hospital, is visiting in Toronto.—Dr. William H. Ellis, for many years chemical expert for the Ontario Government, has been appointed Dean of the School of Practical Science at Toronto University.—The Hon. Dr. William J. Roche, Minister of the Interior for Canada, has returned from Rochester, Minn., much improved in health.

GENERAL

Heiser Returned to the Orient.—Surgeon Victor G. Heiser, U.S.P.H.S. Health Commissioner of the Philippine Islands, who has been on leave in the United States for several months, has returned to his former field of duty at Manila.

Eye, Ear and Throat Specialists Meeting.—The nineteenth annual meeting of the American Academy of Ophthalmology and Oto-Laryngology will be held in the Hotel Copley Plaza, Boston, October 19 to 31, under the presidency of Dr. James M. Ray, Louisville, Ky.

Railway Surgeons' Meetings.—The Association of Seaboard Airline Railway Surgeons will hold its annual meeting in Petersburg, Va., October 19 to 21 under the presidency of Dr. Hampden Aulick Burke, Petersburg, Va.—The New York and New England Association of Railway Surgeons will hold its twenty-fourth annual session at the Hotel Astor, New York City, October 21, under the presidency of Dr. Clifford A. Pease, Burlington, Vt.

District Association Meeting.—The Iowa and Illinois Central District Medical Association held a meeting in the Outing Club, Davenport, Ia., October 5, at which Dr. William J. Mayo, Rochester, Minn., delivered an address on "Cancer and Its Cure," and Dr. Richard H. Hart, Philadelphia, discussed the "Relation of the Milk Supply of Cities to Tuberculosis."

Plague Situation.—Since the report made in THE JOURNAL of October 10, one case of human plague has been discovered, number 30, Ching You, address, 1054 Baronne Street, male, Chinese, aged 51, was taken to Isolation Hospital October 4 at 2 a. m., and died four hours later, right femoral bubo. This makes nine human deaths in New Orleans up to October 4. Rodent cases, numbers 178 to 181, are also reported.

London Heart Specialist Lectures in America.—Dr. Thomas Lewis, assistant physician and lecturer on cardiac pathology in University College Hospital Medical School, London, editor of *Heart* and leader in the newer methods of studying cardiac functions, delivered the eighth course of lectures under the Hertter Foundation at Johns Hopkins University, Baltimore. On October 6 he discussed "Observations Exemplifying Electrocardiography"; on October 8, "The Relation of Auricular Systole to Heart Sounds and Mur-

murs," and on October 9, "Observations on Dyspnea with Especial Reference to Acidosis."—On October 12, Dr. Lewis addressed the Section of General Medicine of the College of Physicians of Philadelphia on the subject of "Heart Sounds."—Dr. Lewis expects to spend the week beginning October 25 at the Peter Bent Brigham Hospital, Boston, as visiting physician *pro tem* to that institution. He will also act as visiting lecturer in medicine at Harvard Medical School and will conduct ward visits, clinics and other student exercises. This is a part of the Harvard plan of having prominent medical men from other cities or abroad as visiting lecturers and temporarily in charge of the wards of the Peter Bent Brigham Hospital, a plan similar to that inaugurated last year by Dr. William S. Thayer at Johns Hopkins Hospital, Baltimore.

Bequests and Donations.—The following bequests and donations have recently been announced:

Philadelphia Blind Asylum and Asylum for the Aged in Germantown, each one-half of the estate of \$63,000 contingent on the death of certain relatives, by the will of Kate Worley.

St. Luke's Hospital, New York City, \$50,000; Association for Improving the Condition of the Poor; Charity Organization Society and House of Rest for Consumptives, each \$10,000, by the will of Herman C. von Post.

New York Skin and Cancer Hospital, \$5,000; State Charities Aid Association, \$8,500 by the will of Florence Phillips.

New York Foundling Hospital, \$5,000 by the will of Rosina M. Nagle. St. Luke's Hospital and Roosevelt Hospital, New York City, each \$79,440, and after the death of beneficiaries the principle to go to the Society for the Ruptured and Crippled, by the will of Frank J. Ransom.

Presbyterian Hospital, Philadelphia, \$50,000; Ladies' Aid Society of the Presbyterian Hospital, \$5,000; Home of the Merciful Savior, \$5,000 by the will of Jane McKee Norris.

Children's Hospital, Philadelphia, \$2,000 by the will of Lucy Jones.

Columbia University, New York City, donations of \$2,500 for the surgical research fund, by Clarence Mackey; \$2,000 by Prof. Frederick S. and Mrs. Lee for the department of physiology; \$2,000 to be added to the Frank Hartley scholarship fund in the College of Physicians and Surgeons, by an anonymous donor.

Faulkner Hospital, Jamaica Plain, Mass., \$20,000 for the endowment of a bed in the name of the testatrix's father, Thomas B. Proctor, by the will of Mary P. Proctor.

Boston University School of Medicine, donation of \$100,000 for the establishment of a Maternity Hospital.

WAR NOTES

Radiographic Service Established.—Madame Curie has established in the Pantin Hospital at her own expense, a radiographic service.

Ambulance Donated.—The Autocar Company of Ardmore, Pa., has donated an ambulance to the American National Red Cross for foreign war service.

French Wounded Rushed to South of France.—The stream of wounded from the battle-fields of the Aisne and Marne are not held in Paris, but are sent to the base hospitals in the south of France.

Russia Needs Medical Supplies.—Victor C. Lassen, an American resident of Petrograd, has returned to the United States to purchase medical supplies and instruments for the Russian government.

Few Wounded.—Of the eight thousand patients in Netley Hospital only about one hundred have gunshot wounds and few of these wounds have been caused by rifle bullets, most of them having been due to shrapnel.

Osler to the Front.—Sir William Osler, formerly dean of the Medical School of Johns Hopkins Hospital, Baltimore, and now Regius Professor of Medicine at Oxford University, has been appointed a colonel in the medical corps of the British army, and has been placed in charge of the hospital service at the front.

Patriotic Physicians of England.—In many places in England the medical men have held meetings and adopted resolutions undertaking to safeguard the interests of their professional colleagues who are called on to leave their practices in the service of their country and also agreeing to take up the medical duties of their associates for the sole benefit of the absentees.

Prophylaxis of Epidemics in Eastern Austria.—Two expeditions have recently been sent to Dalmatia to direct a campaign of prevention against epidemic diseases. One is in charge of A. Ghon, professor of pathologic anatomy at the Prague university; the other is in charge of O. Bail of the chair of hygiene.

The Wounded at Munich.—The first big consignment of wounded came into Munich on the night of August 20-21, consisting of men from the engagements at Mülhausen and Lagarde. Most of the wounds were slight injuries of the

soft parts or long bones. They were found well bandaged and in good condition, showing the excellent status of first aid at the front at that time.

Gold Medals Presented to Germans by British Societies Melted Up for Relief Work.—Roentgen, Lenard and Behring have each recently repudiated the gold medals conferred on them by scientific associations in Great Britain, and have donated them to the Red Cross or other relief work, and now the Hanbury medal, representing a value of about \$125, has likewise been donated for relief work by its recipient, E. Schmidt, professor of pharmacology at Marburg.

Navy Medical Organization.—The Royal Navy of England is said to be fully mobilized and the medical officers of the Royal Navy Volunteer Reserve have been called on for service. This reserve consists of civilian practitioners who have been trained in time of peace in the special work of navy surgeons and many of these are now on duty at the navy hospitals on shore and as surgeons on the war ships at sea.

No More "Appendicitis", Etc., in Germany or Austria.—A campaign of extermination is being urged by German-speaking scientists against all words of English, French or Russian origin. If no German equivalent is available, the Greek and Latin root term is to be used. The *München. med. Wchschr.* comments on the difficulty of always finding an exact equivalent, and proposes that a committee should be appointed to draw up a list of acceptable German equivalents for the more common terms.

Red Cross Appeals for Funds.—The American National Red Cross reports that the returns from the Peace Sunday collections are disappointingly small and urges that liberal responses be made to the appeal for help.—Through the generosity of the Russian-American Steamship Line, the American National Red Cross has been afforded the opportunity to send three thousand pounds of bandages and one hundred stretchers to Russia without transportation charges, by the steamer *Dwinsk*, which sails for Archangel, October 13.

Physicians Appointed on Austrian Army Medical Staff.—The professors of hygiene at the universities of Vienna, Cracow and Lemberg, Schattenfroh, Bujwid and Kutchera, and also K. Büdinger, professor of surgery at Vienna, have been appointed consultants on the chief medical staff of the Austrian army. Other members of the various university medical faculties have been appointed regimental surgeons, including A. Klein, W. Zweig, O. Porges, v. Jagic, F. Wechsberg and A. Herz, all of the internal-medicine teaching force; A. Pilcz and E. Stransky, neurology; Ranzi and Leischner, surgery; and K. Sternberg, W. Pick, Cristofoletti and J. Tandler.

Notes on French Medical Service.—The Paris Academy of Medicine has received from Prof. Edmund Delorme a report on the condition of the French ambulance and sanitary service. Dr. Delorme believes that the service should attempt to treat more wounded, especially those suffering from shrapnel wounds, in order to prevent gangrene and tetanus. For the latter he suggests preventive injections of oxygen, water and antitetanic serum. Dr. A. Dastre gave details of the successful use of a powerful electromagnet for the extraction of splinters of steel and even of rifle bullets. The use of specially prepared paper underclothing to prevent cold was also advised.

Disposition of Red Cross Units.—The Red Cross units transported to Europe on the American Hospital Ship *Red Cross* have been disposed of as follows: Two units, each consisting of three surgeons and twelve nurses with equipment, will be sent to the German, British, French and Austrian armies.—One unit will be sent to Saloniki to join the Servian army.—Belgium has declined the service of surgeons and nurses, but has accepted the medical supplies which will be forwarded from Rotterdam.—It is reported that one or more Red Cross units may be placed on board the English hospital ship which transfers sick and wounded men from the continent to the base hospitals in England and that one unit may be assigned to duty at the American Women's Hospital near Torquay.

A New Missile.—Surgeon Johannes Volkmann (*München. med. Wchschr.*, Sept. 15, 1914) reports thirteen cases of punctured wounds from arrows dropped from an aeroplane on September 1. The missiles were 10-15 cm. long, of pressed steel, about 8 mm. thick and weighing 16 gr. The lower part was solid, terminating in a needle point. The upper part of the arrow consisting of a skeletal arrangement of 4 thin staves, the whole making a star-shaped figure in cross section. The men of the regiment were surprised lying down by sharp sudden wounds suggesting to some that they had been prodded by one of their comrades as a practical joke. The

arrows penetrated arms, feet, calves, fingers, ankles, the cheek, the neck, and in one case, the skull, the latter furnishing the only fatality. In some cases the arrows had to be cut out. The treatment consisted in a sterile bandage, and the wounds healed rapidly by first intention. Only one case was treated with tincture of iodine.

LONDON LETTER

LONDON, Oct. 2, 1914.

The War

In London we can now see thousands of Belgium peasants who have been driven from their homes. The hospitality of this country has been given to these victims by the government. They are accommodated in various parts of the metropolis in poorhouses and in the spacious glass building known as the Alexandra Palace. They can be seen walking about still dazed by the horrors they have witnessed. Most of them come from Antwerp, where they had sought refuge from their burning homes. They are medically examined to see that they are free from infectious disease and put on a British ship. Many of them are of such primitive habits that they have to be taught the use of the bath and the water-closet.

An English citizen recently returned expected to find nothing but terror and distress, whereas if it were not for the newspapers, the wounded, and the thousands of prisoners and refugees coming here, we should not know we were at war. Prices are normal, theaters are open, business goes on just as usual, as do also social affairs, and there seems to be less distress and unemployment than for years past.

As stated in my previous letters, arrangements have been made all over the country for the reception and treatment of the wounded from this titanic war and appear to be working without a hitch. The wounded are conveyed as rapidly as possible from the front to the base hospitals in France on the coast, whence they are conveyed by hospital ships to Southampton, where there is a special staff for their reception and distribution. The arrangements are under the control of a surgeon-general, who holds the appointment of a deputy director of medical service. He has at his command twelve ambulance trains specially constructed for the conveyance of four officers and ninety-six men lying down, or for a considerably greater number of patients sitting up. Twice weekly telegrams are received by him from all the larger military and territorial force general hospitals, stating the number of beds vacant in each. With this information before him he arranges convoys of sick and wounded on arrival and dispatches them to their destination in one or more of the ambulance trains. Already the sick and wounded from overseas have been comfortably placed under treatment in most of the large military or territorial force hospital centers. At the railway stations of these localities arrangements are made by the military authorities for conveying sick and wounded in motor or other ambulance vehicles from the railway stations to the hospitals. Voluntary aid detachments have already done useful work in connection with this stage of the movements of the sick and wounded, and it is expected that the scope for utilizing voluntary aid in this direction will be extended as its value becomes better known. As the military hospitals get filled up arrangements have been made for transferring sick and wounded from them to various hospitals arranged by voluntary effort. Many schemes have been submitted to the war office, through the British Red Cross, in accordance with field service regulations. At present the opportunity of using private hospitals to any great extent has not arisen, as there are still several thousand beds vacant in the military and territorial force hospitals. There is no doubt, however, that in time private hospitals will be of much use as an overflow, and also when it is necessary to set free a sufficient number of beds for future requirements in the larger military hospitals. When sick and wounded are sufficiently convalescent to be granted sick furlough, advantage is being taken of the many offers of accommodation for them in convalescent homes in different parts of the country. In order to prevent overlapping and to facilitate the means of placing men on sick furlough, so far as possible, in their own counties, a central registry of convalescent homes has been formed. Convalescents who require continued hospital treatment will be sent either to the special home in connection with the hospital from which they are transferred (under the supervision of the medical officer of the hospital) or to one or other of the private hospitals already referred to. In all the hospitals arrangements are made for replenishing any deficiencies in the men's kits and for giving them any additional clothing which it may be

desirable for them to take with them when they go on sick furlough. The hospitals are for this purpose receiving many generous gifts of pajama suits and other articles of clothing. At the end of their sick furlough the men are required to rejoin the depots of their regiments in order to be refitted, until arrangements are made for their rejoining their units, either in this country or abroad. They are provided with railway warrants to enable them to go to convalescent homes and to rejoin at their depots. Arrangements have also been made that they shall receive their pay both while they are in hospital and while they are convalescent.

The New Edition of the British Pharmacopeia

Advance copies of a new edition of the British Pharmacopeia have been sent to the press. There are a number of important modifications. No figures or detailed descriptions of plants yielding official substances are given. The histologic characters of the parts of plants officially recognized are fully described whenever the information is important. In many instances in which drugs of vegetable origin are used in a powdered form, the histologic characters of the powder are given when by chemical testing alone the identity of the article in question could not be certainly determined. Abbreviations of the Latin titles have been adopted in the index. The suggestion that a list of such abbreviations should be appended to the British Pharmacopeia in the interest of international uniformity was made by Dr. Remington, chairman of the United States Pharmacopoeial Convention. Similar abbreviations are likely to be adopted in the forthcoming Pharmacopeia of the United States. The metric system has been employed for all pharmaceutical and analytical computations and for the specification of doses, in the expectation that in the near future the system will be generally adopted by British prescribers. As a transitional provision, doses have also been expressed in terms of the imperial system. It has been found desirable to indicate a limit to the proportion of lead or of arsenic permissibly present as an impurity in many pharmacopoeial substances. Such limits are noted in the text, while details of the mode of employing the appropriate quantitative tests are given in an appendix. The same practice has been adopted with respect to many of the methods relating to the determination of acid value, saponification value, iodine value, unsaponifiable matter, esters and alcohols. These methods are given in an appendix, while in the text of the several monographs relating to fixed oils, fats, waxes, resins and volatile oils, only the numbers expressing the appropriate pharmacopoeial values are stated. In the present Pharmacopeia the number of crude drugs and of their galenic preparations which are required to contain a definite proportion of the chief active constituent or constituents has been increased, and the official processes for their "assay" have been revised. It has also been found desirable to prepare extracts of belladonna, hyoscyamus, nux vomica and opium in the form of dry powders, of which the alkaloidal strengths are officially defined. In the case of drugs of definite chemical composition there has been a similar extension of the number to which "assay" processes are to be applied, and, in general, the minimum degree of purity required is specified in the definition of the drug. An international conference respecting the unification of the formulas for potent drugs and preparations in the several national pharmacopoeias, held at Brussels in 1902, led to the adoption in 1906 by the participating states of a series of recommendations commonly referred to as "the international agreement." These recommendations have necessitated certain changes in the preparation, composition and strength of important galenic compounds containing potent ingredients, with the object of promoting uniformity in the pharmacopoeial usage of different countries. They have already been embodied more or less completely in the various national pharmacopoeias that have been issued since 1902. The changes in the British Pharmacopeia thereby occasioned are generally slight; they have been indicated in the prefatory tables and in footnotes, while a separate prefatory table gives a list of deviations from the international agreement, with the reasons for departure from the recommendations. The British practice of measuring liquids by volume and solids by weight has been maintained. It is more convenient, both to prescribers and to dispensers, than the continental practice, contemplated in the agreement, of weighing liquids as well as solids. The variations caused by this difference of usage are, however, of no great importance. It is noteworthy that the number of omissions of drugs in this edition vastly exceeds the number of additions, and surprisingly few of the newer synthetic drugs of German origin have received official sanction.

Marriages

CARROLL HAMPTON MORGAN, M.D., Briceville, Tenn., to Miss Katherine Elma Lloyd of Coal Creek, Tenn., September 21.

ELIJAH WHITE TITUS, M.D., Washington, D. C., to Miss Julia Dove Beardsley of Charleston, W. Va., September 22.

WILLIAM MAXWELL EMPIE, M.D., Virginia, Minn., to Miss Lucy Margret Sterne of Ishpeming, Mich., October 5.

EDWARD JOHN KEMPF, M.D., Baltimore, to HELEN DOROTHY CLARKE, M.D., of Longwood, Boston, September 28.

CLARENCE MICHAEL SCHULTZ, M.D., Platteville, Wis., to Miss Julia Smith of Madison, Wis., September 23.

CAPTAIN RALPH HARVARD GOLDTHWAITE, M. C., U. S. A., to Miss Agnes Pruyn of Albany, N. Y., October 10.

OSWALD PATRICK GOODALL, M.D., DeWitt, Iowa, to Miss Harriet Blake of Los Angeles, September 1.

CHARLES NELSON RACE, M.D., Onondaga, Mich., to Miss Edna Griffin of Battle Creek, Mich., recently.

GEORGE W. LANG, M.D., Alicia, Pa., to Miss Leta McAlpine of South Brownsville, Pa., September 26.

WALTER CHARLES HAMMOND, M.D., to Miss Florence May Nieman, both of Chicago, October 3.

CHARLES HENRY HECKER, M.D., St. Louis, to Miss Sula Anderson of Ottawa, Ill., October 1.

LYMAN ALLEN STEFFEN, M.D., to Miss Erma Edith Hessel, both of Antigo, Wis., September 23.

HERBERT WILLIAM ALLEN, M.D., to Miss Gertrude Joliffe, both of San Francisco, September 24.

FRANCIS DOWNING, M.D., Moosup, Conn., to Miss Rose Shea of Boston, September 29.

FRANCIS AUGUSTINE COLLINS, M.D., to Miss Laura Carey, both of Chicago, recently.

Deaths

John Claudius L'Engle, M.D. Medical College of the State of South Carolina, Charleston, 1861; a surgeon in the Confederate service throughout the Civil War; later a physician and druggist of Jacksonville, Fla.; president of the State Bank of Florida; chairman of the Board of Public Works and a member of the city council of Jacksonville; twice a member of the house of representatives from Duval County and senator from the eighteenth district; for many years a member of the board of trustees of St. Luke's Hospital; died at his home in Jacksonville, September 9, aged 73.

John Goodell, M.D. College of Physicians and Surgeons in the City of New York, 1859; once a member of the New Hampshire legislature from Hillsboro County, for twenty years town historian of Hillsboro and for many years a member of the board of health; died at his home in Upper Hillsboro, N. H., about September 13, aged 85.

Daniel Vincent O'Leary, M.D. Albany, N. Y., Medical College, 1866; once president of the Albany County Medical Society; for many years district and city physician of Albany; for seven years a member of the board of public instruction and from 1885 to 1889 postmaster of Albany; died at his home in that city, August 5, aged 70.

Elbert Rowland, M.D. New York Medical College, New York City, 1858; surgeon of U. S. Volunteers during the Civil War; for several terms a member of the Illinois State Legislature and a resident of Olney, Ill.; died at the home of his son in Mt. Carmel, Ill., September 20, from senile debility, aged 82.

Charles William Harrison, M.D. College of Physicians and Surgeons in the City of New York, 1889; of Hidalgo, Tex.; fell down a stairway at a hotel in Brownsville, Tex., September 11 and died from his injuries two days later, aged 52.

Daniel W. Coble, M.D. Jefferson Medical College, 1867; for more than forty years a practitioner of Westerville, Ohio; a veteran of the Civil War; died at his home, September 19, from organic heart disease, aged 73.

William Rice Saltzgaber, M.D. Rush Medical College, 1899; formerly of Knoxville, Tenn., but for eight years a practitioner of Alamogordo, N. Mex.; died at his home, September 9.

Joseph H. Lopez, M.D. Jefferson Medical College, 1876; medical director for many years of Charity Hospital, Philadelphia, and examining physician and chief of staff of St. John's Orphanage and St. Vincent's Home; died at his home in Philadelphia, September 15, from heart disease, aged 68.

Pitts Edwin Howes, M.D. Eclectic Medical Institute, Cincinnati, 1881; once a member of the Massachusetts State Board of Registration and well known as an editor of medical journals of his school of medicine; died at his home in Dorchester, Boston, September 18, aged 61.

William W. Hawk, M.D. College of Physicians and Surgeons, Keokuk, Ia., 1880; for five years mayor of Colfax, Ia., and for two terms a member of the state legislature from Jasper County; died at the home of his daughter in Newton, Ia., September 15, aged 71.

Edward Wood Markwell, M.D. Indiana University, Bloomington and Indianapolis, 1914; an intern in the Indianapolis City Hospital; died in that institution September 22, from septicemia eleven days after an operation for removal of the tonsils, aged 28.

John Franklin Mackley, M.D. College of Physicians and Surgeons, Baltimore, 1882; a clergyman of the Reformed Church; and secretary of the board of health of Fairfield, Pa.; died at his home in that place, September 16, from heart disease, aged 59.

Oscar Lamar Holmes, M.D. Atlanta College of Physicians and Surgeons, 1899; of Covington, Ga.; a Fellow of the American Medical Association; aged 38; was killed by the explosion of a boiler at a saw mill near Covington, September 23.

Jennie Mary Turner, M.D. University of Michigan, Ann Arbor, 1879; for thirty years a practitioner of Newark, N. Y.; a member of the Medical Society of the State of New York; died in the Rochester, N. Y., General Hospital, September 17, aged 63.

Horatio Roy Luckey, M.D. Indiana Medical College, 1906; of Seymour, Ind.; a Fellow of the American Medical Association; died in the Schneck Memorial Hospital, Seymour, Ind., September 23, a week after an operation for appendicitis, aged 33.

William Frisbie, M.D. New York University, New York City, 1860; a veteran of the Civil War and for half a century a practitioner of Mankato, Minn.; died in the hospital of the Minnesota Soldiers' Home, Minneapolis, September 15, aged 79.

Hal F. Bishop, M.D. University of Wooster, Cleveland, Ohio, 1898; formerly of Lakewood, Ohio; died at his office in Akron, Ohio, September 23, from the effects of poison believed to have been self-administered with suicidal intent, aged 39.

Richard A. Bailey (license Miss., 1882), for many years a practitioner of Crawford, Miss.; aged 73; died at the home of his sister in Gore, Ga., September 4, from the effects of accidental burns received by the explosion of a kerosene lamp.

Herman B. Mohr, M.D. University of Alabama, Mobile, 1891; former chief clerk of the State Board of Health of Alabama, Montgomery; died in a hospital in Birmingham, Ala., September 19, after a surgical operation, aged 56.

George Ivison Ross (license, Massachusetts, 1894) for thirty-eight years a practitioner, and for thirty years a physician of Canton, Mass.; died at the home of his daughter in that city, September 14, from heart disease, aged 67.

Raymond Benjamin Coonley, M.D. New York Homeopathic Medical College, New York City, 1911; of Detroit, Mich.; died in Grace Hospital in that city, September 19, from septicemia, due to an infected wound of the lip, aged 25.

William Perry Markland (license, years of practice, Illinois, 1878); a veteran of the Civil War and for nearly half a century a practitioner of Cuba, Ill.; died at his home September 13, from intestinal obstruction, aged 83.

William H. Annowski, M.D. University of Buffalo, N. Y., 1893; of Buffalo; for thirty-five years an official of the police department of the city; died on his yacht near Crystal Beach, Ont., August 1, from cerebral hemorrhage, aged 61.

Harry J. Huber, M.D. Jefferson Medical College, 1909; a Fellow of the American Medical Association and a member of the Ephrata, Pa., Borough Council; died at his home in Ephrata, September 22, from nephritis, aged 31.

George Harkness Payne, M.D. Boston University School of Medicine, 1875; a member of the Massachusetts Surgical and Gynecological Society; of Salem, Mass.; died in Medford, Mass., August 5, aged 73.

Stanley Forbes Duncan, M.D. Tufts' College Medical School, Boston, 1912; later house physician of the Malden, Mass., Hospital; died at his home in Quincy, Mass., September 23, aged 27.

Robert W. Eanes, M.D. Washington University School of Medicine, Baltimore, 1870; a Confederate veteran; died at his home in Eanes Cross Roads, Va., September 19, from nephritis, aged 68.

Louis O. Carson, M.D. Indiana Medical College, Indianapolis, 1877; a member of the Indiana State Medical Association; died at his home in Indianapolis, August, 21, from tuberculosis, aged 61.

John G. Albers, M.D. Cincinnati College of Medicine and Surgery, 1871; a member of the Ohio State Medical Association; died at his home in Fulda, Caldwell, Ohio, September 18, aged 78.

Leigh Seward Krake, M.D. Johns Hopkins University, Baltimore, 1914; of Plainview, Neb.; died in Johns Hopkins Hospital, Baltimore, July 9, from gangrene of the lung, aged 28.

Robert Briggs, M.D. Rush Medical College, 1869; Bellevue Hospital Medical College, 1875; of Clayton, Ill.; died in the Jacksonville State Hospital, September 16, from exhaustion, aged 67.

Bernard Clausen, M.D. New York Homeopathic Medical College, New York City, 1888; formerly of Hoboken, N. J.; died at his home in Binghamton, N. Y., September 24, aged 50.

William C. Ransom, M.D. Vanderbilt University, Nashville, Tenn., 1877; a member of the Tennessee State Medical Association; died in his home in Lewisburg, Tenn., August 2.

Charles C. L. Rudicil, M.D. Atlanta, Ga., Medical College, 1888; a member of the Medical Association of Georgia; died at his home in Chickamauga, Ga., August 14, aged 48.

Charles P. Garland, M.D. Hospital College of Medicine, Louisville, 1891; of Rock Island, Va.; died recently in the Tucker Sanatorium, Richmond, Va.; from pellagra, aged 47.

John Robinson Rutherford, M.D. Victoria, Cobourg, Ont., 1868; of Aurora, Ont.; died at the home of his daughter in Windsor, Ont., September 23, from pneumonia, aged 74.

L. G. Danner (license, Tenn., 1889); a Confederate veteran and for about forty-five years a practitioner of Milan, Tenn.; died at his home in Barton, Fla., September 10, aged 69.

Dennis Cuddahy, M.D. Fort Wayne, Ind., College of Medicine, 1902; of South Bend, Ind.; died in St. Joseph's Hospital in that city, September 26, from diabetes, aged 53.

Arthur Lee Heglar, M.D. Tennessee Medical College, Knoxville, 1895; of St. John, Wash.; died in St. Luke's Hospital, Spokane, August 17, from septicemia, aged 44.

J. H. Bell, M.D. McGill University, Montreal, 1888; for fifteen years a surgeon on steamers of the White Star Line; died in Liverpool, England, September 15, aged 49.

Samuel Buzzard, M.D. Philadelphia University of Medicine and Surgery, 1871; of Russell, Ia.; died in the Methodist Hospital, Des Moines, Ia., September 16, aged 74.

Louis C. Pappa (license, Ohio, 1897) a practitioner of Ohio for forty-eight years; died at his home in Youngstown, September 23, from heart disease, aged 83.

Myron H. Parmelee, M.D. Hahnemann Medical College, Chicago, 1870; a veteran of the Civil War; died at his home in Toledo, September 22, aged 65.

George James Gladman, M.D. McGill University, Montreal, 1886; died at his home in New York City, October 13, from cerebral hemorrhage, aged 50.

Adam Eddmon, M.D. Friedrichs University, Halle, Germany, 1867; died at his home in Tontogany, Ohio, September 16, from septicemia, aged 65.

Charles Mariner Coolidge, M.D. Dartmouth Medical School, Hanover, N. H., 1888; died at his home in North Waterford, Maine, August 12, aged 50.

Joseph Mosher Heller, M.D. Rush Medical College, 1877; died at his home in Osage City, Kan., September 19, from heart disease, aged 61.

A. E. Currier (license, Kansas, seven years' practice, 1901); for many years a resident of Fort Scott; died at his home, September 19, aged 80.

Constantine Lomax Dickens, M.D. Rush Medical College, 1879; died at his home in LaFontaine, Ind., August 19, from heart disease, aged 58.

Julia Agnes Milmoie, M.D. Syracuse, N. Y., University, 1912; died at her home in Nyando, N. Y., August 8, aged 35.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

"PROFESSOR" SAMUELS AGAIN

Denied the Use of the Mails and Convicted of Fraud in the United States Court

Many readers of THE JOURNAL will remember the exposés of "Professor" Samuels of Wichita, Kan. Briefly, Samuels was a mail-order medical faker, who advertised to cure practically all disease by means of a wonderful liquid that he had discovered, which was administered by dropping it into the eye of the afflicted person. His marvelous liquid was analyzed by the Association's chemists and found to consist essentially of a little common salt and sugar dissolved in hydrant water. The Samuels fraud flourished and the faker himself waxed rich. Probably because he thought he could carry on his operations on a more extensive scale in a larger city than Wichita, he moved his fakery to Detroit. This change of base was called attention to editorially in THE JOURNAL.² The public prosecutor of Detroit immediately "got busy," raided the Samuels concern, seized the quack's card-index of present and prospective victims and carried off a barrel of sugar and a bin of salt. Finding Michigan so unsympathetic, Samuels went back to his old stamping ground in Wichita and continued to fleece the sick as before.

On March 28, 1914, a memorandum, charging that "Professor" H. Samuels and the Professor H. Samuels Remedy Company, both of Wichita, Kan., were violating the postal laws in that they were obtaining money through the mails by means of false and fraudulent pretenses, representations and promises, was delivered to both Samuels and his company. They were further called on to show cause, on or before April 10, 1914, why a fraud order should not be issued. A continuance was granted, at the request of Samuels, until April 30, 1914, at which time Amos W. Marston, a Chicago attorney, appeared before the government officials on behalf of the Samuels fakery. At the conclusion of the hearing, the attorney was given, at his request, until May 16 for the filing of a brief. When the brief was received by the federal authorities it was given careful consideration, and after a thorough examination of all the evidence in the case, Assistant Attorney-General Lamar recommended the issuance of a fraud order. On June 1, 1914, a fraud order was issued.

The government's investigation brought forth but few additional facts to those published in THE JOURNAL. The government chemists found, as did the chemists of the Laboratory of the American Medical Association, that the preparation sold by Samuels was essentially a pinch of sugar and a pinch of salt in ordinary hydrant water. The postoffice inspectors wrote to the Samuels concern under various names and received at different times letters representing that the Samuels remedy would cure bow-legs, flat-foot, sprained ankle, epileptic fits and lack of weight. Speaking of the Samuels nostrum, the Assistant Attorney-General says:

"The claims for this solution, when considered in connection with its analysis, are palpably fraudulent, and it is clear that no one could be induced to purchase it if its real composition were revealed. Hence it is described as a new, peculiar and secret remedy in the advertising matter; and its real character fraudulently concealed. The analysis shows that there is nothing new, peculiar or secret about this solution and I so find."

An investigation was also made by the federal authorities of one case described in Samuels' testimonials. This particular testimonial, which has been used by the quack for some years, was to the effect that Samuels had cured an old

character known as "Blind Joe" of Topeka, Kan. According to the claims made by Samuels, "Blind Joe" had been sightless for several years and "had exhausted all of the means in his power to be cured," had given up in despair until he "fell into the hands of Professor Samuels." Then: "In a short time he was able to see practically as well as he ever had in his life." The federal authorities interviewed the father and sister of "Blind Joe," both of whom swore that "Blind Joe" was blind; was never cured by "Professor" Samuels but died blind, and they declared further that the representations made by Samuels were absolutely false.

It was shown further at the trial that "Professor" Samuels was not, in fact, a professor at all. In March, 1914, Samuels was sued by a woman who was suffering with cataract and had taken Samuels' "treatment" without success. She was awarded \$400 damages against this faker. At the trial Samuels admitted, under oath, on the witness stand, that he was not a scientist or a physician, that he had not read any medical or scientific books on diseases of the eye for twenty years; that he was not competent to testify whether the woman had a cataract or not and that he had treated her without examination.

In addition to being debarred from the use of the United States mails, Samuels was indicted by the federal grand jury and put under \$20,000 bonds for appearance in the United States court. This trial has just been completed and Samuels was found guilty in the federal court at Wichita on eleven counts of using the United States Mails to defraud; the maximum penalty for each one of the eleven counts is a fine of \$1,000 and five years in prison. It is to be hoped that this cruel and heartless swindler will be given a penitentiary sentence.

CONVICTIONS UNDER FOOD AND DRUGS ACT

NURITO

Nurito was exposed in THE JOURNAL, Aug. 10, 1912. It was analyzed by the Association's chemists and found to consist of milk sugar, phenolphthalein and pyramidon. THE JOURNAL's article called attention at the time to the falsity of some of the claims made by the Magistral Chemical Company of New York, the manufacturers of Nurito. One statement made was that "Only U. S. P. ingredients are used in Nurito." As neither of the two essential drugs in this nostrum, phenolphthalein and pyramidon, is in the United States Pharmacopeia, this claim was evidently false.

On June 17, 1913, United States officials charged the Magistral Chemical Company with shipping in interstate commerce a product, Nurito, that was misbranded in violation of the Food and Drugs Act. This charge was made on the grounds that the following statements on the label were false:

"Only U. S. P. ingredients are used in Nurito . . ."

"Nurito is absolutely free from sugar and sweetening matter."

The government chemists analyzed the stuff and found that Nurito contained both pyramidon and milk sugar, the former a drug that is not in the United States Pharmacopeia and the latter a sugar and sweetening matter. On July 1, 1913, the company pleaded guilty and the court suspended sentence. The report of the case was issued Aug. 3, 1914.—[Notice of Judgment, 2997.]

RADAM'S MICROBE KILLER

This wretched fraud has been repeatedly exposed and has twice been declared misbranded under the Food and Drugs Act (Notices of Judgment, 205 and 623). It is interesting to note that the first two cases against this fraud were quickly decided. In the first instance twelve cases of Radam's Microbe Killer were seized, and the makers did not appear in defense of the suit. The court ordered the stuff destroyed by the United States marshal. In the second case, the Radam Microbe Killer Company pleaded guilty and twenty-five cases of the nostrum were destroyed. Both of these cases against Radam's Microbe Killer came before the Supreme Court's decision on the Food and Drugs Act which held

1. Reprinted in "Nostrums and Quackery"; also in pamphlet (price 4 cents).

2. "What's the Matter with Michigan?" THE JOURNAL A. M. A., March 23, 1912, p. 863.

that, as originally passed, the law did not refer to curative claims when it prohibited "any statement . . . which shall be false or misleading in any particular. . . ." This decision, it will be remembered, so seriously weakened the law as to call forth a presidential message urging an amendment that would specifically fill the gap discovered by the Supreme Court. The Shirley amendment was the result. This declares that a product shall be considered misbranded "if its package or label shall bear or contain any statement, design or device regarding the curative or therapeutic effect of such article, or any of the ingredients or substances contained therein, which is false and fraudulent."

The latest conviction against Radam's Microbe Killer was brought on the charge that the claims for the curative effect of the nostrum were "false and fraudulent." The government officials declared that the claim made for the stuff that it would destroy microbes in the human system was false; that the claims that it was "harmless," was a "tonic," was "antiseptic" and a "digestive," were false; that the claim that it was "food for the blood" was false; and that the claim that it was effective in the treatment of consumption, cancer, catarrh, yellow fever, leprosy, diphtheria and small-pox, was also false.

In this instance, the claimant, D. W. Ham of Minneapolis, fought the case in the courts. The matter came to trial before an intelligent jury whose understanding of the case was not befogged by the specious arguments of those who were defending the fraud. The jury returned a verdict in favor of the government's contention that the stuff was falsely and fraudulently misbranded and the court adjudged it condemned and forfeited, and ordered the stuff destroyed by the United States marshal.—[*Notice of Judgment, 3004.*]

DR. HILTON'S SPECIFIC NO. 3

Dr. Hilton's Specific No. 3 is said to be prepared by G. W. Hilton, M.D., Lowell, Mass. Some of the nostrum was shipped in interstate commerce and the federal authorities charged that the preparation was misbranded in violation of the Food and Drugs Act. Some of the claims made on the label for this stuff were:

"Cures colds, the grippe, and absolutely prevents pneumonia."

"Kills the cold, prevents pneumonia, grippe, bronchitis, and all ills that develop from a cold."

"In Boston where Hilton's No. 3 is almost universally used, it has reduced the death rate from pneumonia more than one-half since 1891."

The stuff was analyzed by the government chemists and found to have "no medicinal properties whatsoever." No claimant appeared for the property and the court entered judgment for condemnation and forfeiture and it was ordered by the court that the product *should be sold by the United States marshal!* The moral and ethical problem involved in the sale by the government of a product of this sort is not discussed in the federal bulletin.—[*Notice of Judgment, 3043.*]

DR. SULLIVAN'S SURE SOLVENT

Dr. Sullivan's Sure Solvent is manufactured by the Dr. Sullivan Sure Solvent Co., Buffalo, N. Y., and St. Catherine's, Ont. A consignment of the preparation, shipped in interstate commerce, was seized by the federal authorities on the charge that it was misbranded under the Food and Drugs Act. The stuff, which contained 9 per cent. alcohol, bore the following claims on the labels and shipping cases:

"Gives the most rapid cure of those suffering from the abusive use of alcoholic beverages."

"Cures all kidney, stomach and liver troubles."

"The only remedy in the world today that positively will cure rheumatism and kidney trouble."

"If a tumor is growing, a cancer developing . . . Sullivan's True Solvent will disperse it for good."

Misbranding was alleged because of the false, misleading and fraudulent statements regarding the curative properties of this nostrum. The company did not appear to defend the suit and judgment of condemnation and forfeiture was entered, the court ordering that the product be destroyed.—[*Notice of Judgment, 3130.*]

WEST BADEN SPRUDEL WATER

West Baden Sprudel Water is bottled by the West Baden Springs Company, West Baden, Ind. The federal authorities filed a libel for seizure and condemnation of twenty-eight cases each containing twenty-four bottles of this "water" that had been shipped in interstate commerce, charging that it was both adulterated and misbranded in violation of the Food and Drugs Act. The product was declared adulterated for the reason that it contained and in part consisted of a "filthy and decomposed animal substance." Misbranding was alleged because the labels on the bottles, etc., were false, misleading and deceptive in that they represented and indicated that West Baden Sprudel Water was a natural spring water without additions or abstractions of any kind. The government chemist declared such was not the fact as sodium sulphate (Glauber's salt) magnesium sulphate (Epsom salt) and sodium chlorid (common salt) had been added to the water. Neither the West Baden Springs Company of West Baden, Ind., nor the firm of Levi and Ottenheimer of Cincinnati, Ohio, in whose possession the shipment was found, appeared to defend the case, although due notice of the proceedings had been given both. The government's charges were upheld by the court and the judge ordered that the product should be destroyed by the United States marshal.—[*Notice of Judgment, 3136.*]

RUSSELL'S WHITE DROPS

The Russell Medicine Company, Providence, R. I., manufactured Russell's White Drops. The nostrum contains, among other things, both alcohol and codein. It was sold under the following claims:

"Warranted to be free from any injurious effects or drug forming habits."

"A safe and effectual remedy for babies and children teething."

"An invaluable remedy for the relief and cure of wind colic, acidity of the stomach, diarrhea, dysentery, restlessness, etc., in children teething."

"Harmless and effectual."

The label of this "baby killer" admitted the presence of 10 per cent. alcohol and codein $\frac{1}{4}$ grain to each fluidounce, but the admission was, according to the government's report, in inconspicuous type. Misbranding was alleged for the reason that the true amount of alcohol and codein was not given, the nostrum containing more than 10 per cent. alcohol and a much larger quantity of codein than that admitted on the label. Misbranding was further alleged because of the false and fraudulent claims made on the label of the stuff. No one appeared in defense of this wretched nostrum and the court ordered the stuff destroyed.—[*Notice of Judgment, 3154.*]

Causes of Tuberculosis.—Tuberculosis may be put into three groups. All of us who are here come in the first. If I had an instrument here with which I could look into the chest or the abdomen of each of you, the probability is that in 90 per cent. of you would be found somewhere a small area of tuberculosis. So widespread is the bacillus that practically all humans by the time they become adults harbor the germ of the disease. Why don't you die? Because we are not guinea-pigs or rabbits, we have obtained a certain immunity. But the germ is in us, though negative, and with all of us there is the possibility of slipping into the two other groups. The second group comprises those in whom the disease is active enough to produce symptoms, but in whom there is the possibility of arrest or cure, with restoration to working health. Those in the third group are doomed, the disease progresses week by week, month by month, year by year and from one year to five sees the end. When workers have living wages, when the house becomes the home, when the nation spends on food what it spends on drink, then, instead of hundreds of thousands, there will be millions in the first group, with practically immunity. The enemy has been traced to its very stronghold, which is defended by the three allies poverty, bad housing and drink.—Sir William Osler's address at Leeds Conference for the Prevention of Tuberculosis.

Correspondence

The Twilight Sleep in Obstetrics

To the Editor:—While Krönig and Gauss are engrossed in their military duties, the propaganda for the twilight sleep still goes on in McClure publications. The article in *McClure's* for October is a good example of the fallacious arguments and pictorial intimations that are being pressed on the American public in support of this very doubtful procedure in obstetrics. Pictures of scopolamin-morphin or Freiburg babies adorn several pages of the magazine. They generally represent vigorous children from 3 to 5 years of age as if the vigor depended on the fact that their mothers had received a sixth of a grain of morphin and an indeterminate amount of scopolamin during their birth. One illustration shows a child of 6 born without scopolamin and a sister of 4 granted the blessing of "twilight sleep." The legend reads: "A Freiburg mother and her two children. The older child (at the right) was born in the 'old school' way, and, though 6 years old, is being rapidly outdistanced in physical development by his 4-year-old sister, born under scopolamin." Thus the intimation is continually presented to the reader that scopolamin-morphin has some magic far-reaching influence that changes the physical destiny of the child. The whole question is confused in the reader's mind. The issue is changed from a technical question of the practice of obstetrics to one of sociologic importance. The fallacy that these are selected cases and that there is no reason to suppose that a single dose of a drug given the mother at the time of birth will affect the future of the child is lost sight of. Let us dress up a hundred handsome children whose mothers bore the pangs of labor without any anesthetic (and such could easily be found) and take their pictures and what have we proved? Nothing at all. Even the layman can see the utter futility of trying to decide a question by such evidence.

Again, the facts are not fairly represented in the picture drawn of the course of labor under scopolamin-morphin. The authors note that at a certain period the relatives unostentatiously withdraw. No hint is given of the reason for this precaution. This reason, however, is supplied by Krönig, who says:

"The disadvantages of this method consist in the fact that with some women, especially when the surroundings are not very quiet, transitory states of confusion of mind and excitement occur. These are of no material importance, so long as the relations of the mother do not remain in the room, for these states of excitability make an unpleasant impression on the family. In consequence of this, we only carry out the method of twilight sleep in cases where the relations promise to be out of the room during the whole time of the birth" (*Surgery, Gynecology and Obstetrics*, May, 1914, p. 529).

Is it not time that this misleading popular exploitation of a practically discarded method be met by clear statements from the medical profession through the press? Such statements ought to show that a degree of anesthesia satisfactory to most patients is already achieved in the routine practice of obstetrics; that "twilight sleep" is not absence of pain but abolition of memory; that, as Lequeux says, "the patient is delivered as in a delirium." The psychic influence on the subconscious mind of the pain of labor felt but not remembered in the absence of friends remains for the neurologist to elucidate.

J. H. SALISBURY, M.D., Wheaton, Ill.

The Duck as an Insect Destroyer

To the Editor:—Corroborating Dr. Dixon's interesting report on "The Duck as a Preventive Against Malaria and Yellow Fever" (*THE JOURNAL*, Oct. 3, 1914, p. 1203), I have been observing the food of the wild duck for the past three years, and find that the mosquito and larvae are readily devoured by the duck. I have eight varieties under observation and note that the best insect destroyers are the beautiful wood duck (*Aix sponsa*) and the green-winged teal (*Nettion carolinensis*). These ducks are smaller than the mallard

(*Anas platyrhynchos*) and their diet more insectivorous. The wood duck is almost extinct except in captivity. It is the most beautiful of all the duck family; therefore the introduction of this duck would serve to perpetuate its kind and also be of use in keeping down all noxious aquatic insect life.

WILLIAM C. HERMAN, M.D., Cincinnati.

Instructor in Pharmacology, Medical College of the University of Cincinnati.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted on request.

POISONING FROM PHENOLAX

To the Editor:—I have just examined a young nurse from Johns Hopkins Hospital for an apparent poisoning of the skin (dermatitis medicamentosa) from "Phenolax." As this is my first observation of poisoning from this drug I write to ask (1) if you have heard of similar cases, and (2) if you can tell me the composition of this drug. The patient is 33 years of age, and, on her three weeks' vacation, had been eating voraciously of fresh vegetables "because they were so good." A mild constipation had developed into a rather marked one and for this reason a friend advised Phenolax, which the patient had never before taken. This was at 11 a. m. (1 pill) September 14. At 4 o'clock p. m. the first skin eruption appeared on the lower abdomen and at 6 o'clock there was a violent movement of the bowels and extreme nausea but no vomiting. At 6:30 the patient felt better but very "wobbly." The skin eruption appeared over larger and larger areas but the subjective symptoms were almost nil. To-day, September 15, at 11:30 there is on the skin over the lower abdomen and down the thighs to the knees (with the exception of a white band at the top of the stockings) and on the right breast a claret-red, mottled but almost homogeneous erythema tending toward purpura. The border is not sharply defined. The temperature is normal and the patient thinks that the eruption has faded a little.

CHARLES J. WHITE, M.D., Boston.

ANSWER.—1. We have no record of a similar effect from the taking of phenolphthalein. It is generally believed that the remedy is not absorbed, although albuminuria following its ingestion has been reported. It is quite possible that the eruption observed in this case was due to reflex disturbances of the vasomotor system from intestinal irritation or to the absorption of toxins already present in the intestine when the drug was taken.

2. Phenolax is one of many proprietary phenolphthalein preparations which physicians are asked to prescribe although we know no reason why they should do so, unless it be that they have failed to familiarize themselves with the properties, dose, etc., of phenolphthalein itself (*THE JOURNAL*, April 30, 1910, p. 1458). Phenolax wafers are tablets containing in each, according to their exploiters: phenolphthalein, 1 grain, and "aromatics" and sugar enough to make 5 grains. Just what purpose aromatics and sugar serve we are not informed. We imagine that it is to mislead the unthinking into believing that the combination has some mysterious value that phenolphthalein does not have. It is certain that the combination can be sold at a much better profit than can phenolphthalein alone.

In this connection we again ask, Why should we prescribe phenolphthalein under a proprietary name when we can do so under its own name and without mystifying ourselves? Since phenolphthalein is practically insoluble in water and tasteless, there can be no need for adding aromatics and sugar, especially when it is swallowed in the form of a tablet.

TEST FOR DETERMINING ALCOHOL

To the Editor:—Can you give me a simple test for determining the presence of alcohol in a beverage which looks and smells like port wine, but is claimed to be non-alcoholic?

GEORGE MINGES, M.D., Dubuque, Iowa.

ANSWER.—Many tests for alcohol (ethyl, or grain) have been proposed, but most of them are too complex for application in a physician's office. As a general rule liquids to be tested for alcohol should be distilled and the identification tests applied to the distillate. In the absence of other distillation apparatus, one that is satisfactory may be improvised by fitting a 6-inch test-tube with a perforated cork carrying a glass tube bent downward, the lower limb being wrapped

with wet filter paper. Another test-tube may be used to collect the distillate. Ten c.c. of the solution to be tested are placed in the apparatus and cautiously heated with a Bunsen burner or spirit lamp until about 1 c.c. has passed over. Five or six drops of a 10 per cent. solution of sodium hydroxid are added to the cold distillate and just sufficient compound solution of iodine (Lugol's solution) to produce a faint brownish-yellow tint. The solution should be shaken two or three times during an interval of two minutes. No precipitate of iodoform should be produced, indicating absence of acetone and a few other substances which yield iodoform under these conditions. The solution is now warmed to about 60 C. (140 F.), which is about as hot as one can hold in the hand. On shaking the test-tube a pale lemon-yellow precipitate of iodoform should appear within two minutes. To be successful with the test in every case requires a little practice, and it may be found necessary to add a few drops more of the iodine solution if the mixture becomes colorless, or a drop or two more of the alkali solution if the test mixture be too highly colored. If the distillate contains much alcohol it should be diluted with two or three volumes of water before applying the test. Unfortunately there are some substances other than ethyl alcohol which give this test; but in a liquid which is sold as a beverage these substances are not likely to be present in interfering amounts.

USE OF PARAFFIN OIL

To the Editor:—1. Do you regard the continuous administration of paraffin oil over a long period especially liable to cause cancer? A recent report of Dr. H. C. Ross of the British Government Commission for the study of the causes of the frequent occurrence of cancer among paraffin workmen indicates that there are substances in paraffin oil associated with anthracene which may cause cancer, but that these substances are soluble in water and may be removed by washing.

2. Is paraffin oil now obtainable from which these substances have been removed? If so, where?

3. Will you kindly give formula for a satisfactory emulsion of paraffin oil for those unable to take the plain oil?

THOMAS J. TUDER, M.D., Keokee, Va.

ANSWER.—1. The occurrence of cancer from chronic irritation is recognized. If paraffin has any influence in the production of cancer it is probably due to the presence of irritating ingredients. The purified paraffin oil, such as is recommended for medicinal use, is entirely bland and non-irritating. There is no reason to suppose that the continued use of this would cause cancer.

2. A paraffin oil corresponding to the requirements of a bland, non-irritating oil is on sale by dealers in pharmaceutical preparations. This oil may be obtained by prescribing Paraffinum Liquidum or Petrolatum Liquidum, Grave, as described in THE JOURNAL, May 30, 1914, p. 1740.

3. The following is a modification of Emulsio petrolei, British Pharmaceutical Codex, a book corresponding somewhat to our National Formulary:

Liquid paraffin.....	30.00
Gum acacia, in powder.....	15.00
Tragacanth, in powder.....	1.35
Oil of cinnamon.....	0.20
Elixir of gluside (saccharin)....	0.33
Distilled water.....to make	100.00

Triturate the liquid paraffin and the oil of cinnamon with the powdered gums, and add all at once 25 parts of distilled water; then add the elixir of gluside and dilute with sufficient distilled water to produce the required volume. The dose is from 4 to 15 c.c.

PAPINE, CELERINA AND ALETRIS CORDIAL

To the Editor:—Please tell me the principal ingredients of the following preparations now being sold to the profession through the drug stores: (1) Papine, made by Battle & Co.; (2) Celerina, and (3) Aletris Cordial, the two latter made by the Rio Chemical Company. On what does their virtue (if they have any) depend?

E. R. MILLER, M.D., Frederick, Md.

ANSWER.—1. Papine is a simple aqueous-alcoholic solution of morphin (1 grain to each ounce). It is exploited under the utterly unwarranted claim that it "does not nauseate, constipate nor create a habit." (See THE JOURNAL, April 29, 1911, p. 1278.)

2. Celerina is a shotgun mixture, said to contain, in addition to 42 per cent. alcohol (about the same percentage as that found in whisky), kola, viburnum, celery, cypripedium, xanthoxylum and aromatics.

3. Aletris Cordial is declared to contain 28 per cent. alcohol

(a much higher percentage than is found in the strongest wine), besides three obsolete and valueless drugs, aletris, helonias and scrophularia. Whatever virtue there may be in either Celerina or Aletris Cordial is that derived from alcohol.

STANDING OF A NON-RESIDENT PHYSICIAN

To the Editor:—During the past summer I spent my vacation in a small town in Michigan and I was frequently consulted by the resorters, both in emergencies and at other times, the nearest resident physician being located in a town about eight miles distant. I wish you would kindly answer the following questions for me, remembering that I am licensed to practice in the state of Ohio, only:

1. Have I the legal right to treat these people gratis?

2. Have I the legal right to charge for my services and would I have any standing in court in event payment of my bill was refused and I should decide to sue for the same, irrespective of where the patient lives?

A. B., Cincinnati.

We submitted the foregoing questions to Dr. Beverly D. Harrison, Secretary of the Michigan State Board of Registration, who sent the following answers:

ANSWER.—1. The Michigan law requires that all practitioners should possess a certificate of registration, or license, issued by this board, and that such certificate should be filed with the clerk of the county in which the physician practices. The Michigan medical act exempts persons giving emergency treatments, but of course there is a limitation to the attendance, when persons giving such treatment could not charge for same. The Michigan act does not require that a person, in order to be convicted, should charge a fee. Therefore, a non-registered physician giving his services to people would be in violation of the act.

2. Absolutely no standing whatsoever in any court.

ORTHOSTATIC ALBUMINURIA

To the Editor:—Can you refer me to literature embodying recent investigations concerning orthostatic albuminuria?

LUELLA E. AXTELL, M.D., Marinette, Wis.

ANSWER.—The following is a partial list of references to works on this subject:

- Reyber, P.: Relation between Orthostatic Albuminuria and Tuberculosis, *Monatschr. f. Kinderh.*, July, 1913. Abstracted in THE JOURNAL, July 19, 1913, p. 230.
- Fitzsimmons, H. J.: Orthostatic Albuminuria Treated by Exercise, *Boston Med. and Surg. Jour.*, Nov. 13, 1913.
- Diell, K.: Pathology of Lordotic Albuminuria, *Wien. klin. Wchschr.*, Feb. 13, 1913. Abstracted in THE JOURNAL, March 22, 1913, p. 951.
- Gomolitsky, V.: Orthostatic Albuminuria, *Ztschr. f. klin. Med.*, 1913, lxxvii, Nos. 1-2. Abstracted in THE JOURNAL, April 5, 1913, p. 1117.
- Arnold, W.: Orthostatic Albuminuria and Tuberculosis, *München. med. Wchschr.*, March 4, 1913. Abstracted in THE JOURNAL, April 12, 1913, p. 1196.
- Jehle, L.: Correction of Spinal Anomalies in Orthostatic Albuminuria, *Wien. klin. Wchschr.*, Feb. 27, 1913.
- Sturm, J.: Orthostatic Albuminuria, *München. med. Wchschr.*, April 8, 1913.
- Wendenburg, F.: Etiology of Orthostatic Albuminuria with Special Regard to Tuberculosis, *Arch. f. Kinderh.*, 1914, lxii, Nos. 1-2.
- Bass, M. H., and Wessler, H.: Blood-Pressure in Children Showing Orthostatic Albuminuria, *Arch. Int. Med.*, April, 1913, January, 1914. Abstracted in THE JOURNAL, Feb. 7, 1913, p. 487, and THE JOURNAL, June 7, 1913, p. 1332.

LYMPH-NODES AND LYMPH-GLANDS

To the Editor:—Will you please define for me your understanding of the words "nodes" and "glands"? Is there a proper field for the term "lymphatic gland" and what is the field of application for the term "lymphatic node"?

H. E. PEARSE, M.D., Kansas City, Mo.

ANSWER.—This question was answered in THE JOURNAL, May 17, 1913, p. 1560.

LITTEN'S SIGN

To the Editor:—Please explain Litten's sign, as mentioned in THE JOURNAL Sept. 12, 1914, p. 943.

B. J. LEAHY, Port Jervis, N. Y.

ANSWER.—Litten suggested in 1892 a procedure for noting the movements of the diaphragm. The patient should lie on his back with his face away from the light which should fall from the head or foot of the bed. The observer stands three or four feet away with his back to the light and observes the chest at an angle of about 45 degrees. In inspiration, a short, narrow shadow or wave starts on either side at about the

sixth interspace and passes downward over two or more ribs or even to the margin of the ribs. In expiration it begins below and moves upward, but is less easily seen. In normal persons it moves, usually, more than 6 cm. It is best seen in spare, muscular persons whose chest walls are not too thick. It is absent when the pleural cavity contains fluid or air, and when it is obliterated by adhesions, in pneumonia of the lower lobe in emphysema of the lungs, and in intrathoracic tumors low down in the chest. With lessening of the extent of the movement, the respiratory capacity is diminished and tuberculosis may be looked for.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ARKANSAS: Little Rock, November 10-11. Sec., Dr. W. S. Stewart, 404 Citizens Bank Bldg., Pine Bluff. Homeopathic, Little Rock, November 12. Sec., Dr. Scott C. Runnels, 900 Scott St., Little Rock. Eclectic, Little Rock, November 10-11. Sec., Dr. C. E. Laws, Ft. Smith.

CONNECTICUT: New Haven, November 10-11. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven. Homeopathic, New Haven, November 10. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven. Eclectic, New Haven, November 10. Sec., Dr. T. S. Hodge, 19 Main St., Torrington.

LOUISIANA: New Orleans, October 29-31. Sec., Dr. E. L. Leckert, New Orleans.

MAINE: Portland, November 10-11. Sec. Dr. Frank W. Searle, 776 Congress St., Portland.

MISSISSIPPI: Jackson, October 27-28. Sec., Dr. E. H. Galloway, Jackson.

NEBRASKA: Lincoln, November 11-12. Sec., Dr. H. B. Cummins, Seward.

NEVADA: Carson City, November 2. Sec., Dr. S. L. Lee, Carson City.

NEW JERSEY: Trenton, October 20-21. Sec., Dr. H. G. Norton, Trenton.

SOUTH CAROLINA: Columbia, November 9. Sec., Dr. A. Earle Boozer, 1806 Hampton St., Columbia.

TEXAS: Waco, November 10-12. Sec., Dr. W. L. Crosthwait, Amicable Bldg., Waco.

Higher Preliminary Requirements in Oklahoma

A letter from Dr. John W. Duke, secretary of the Oklahoma State Board of Medical Examiners, says that, in accordance with the requirements of the medical practice act, one year of collegiate work, in addition to an accredited four-year high-school education, will be required of all applicants who graduate in 1918 and thereafter. This applies to all students matriculating in the session of 1914-1915 and thereafter who may desire to practice medicine in Oklahoma.

There are now twenty-two states in which the requirement of one or two years of collegiate work has been made obligatory for those who intend to practice in those states. These states, the number of collegiate years required and the time the requirement is effective are as follows:

State Examining Board of:	Number of Years Required	Affects Students Matriculating	Affects Applicants Graduating
Minnesota.....	2	1908-09	1912
North Dakota.....	2	1908-09	1912
Colorado.....	2	1910-11	1914
Connecticut.....	1	1910-11	1914
Kansas.....	1	1910-11	1914
Indiana.....	2	1910-11	1914
Utah.....	1	1910-11	1914
Iowa.....	2	1911-12	1915
South Dakota.....	2	1911-12	1915
Vermont.....	1	1912-13	1916
Kentucky.....	1	1914-15	1918
Michigan.....	1	1914-15	1918
New Hampshire.....	1	1914-15	1918
Oklahoma.....	1	1914-15	1918
Pennsylvania.....	1	1914-15	1918
Rhode Island.....	1	1914-15	1918
Virginia.....	1	1914-15	1918
Washington.....	2	1915-16	1919
Alabama.....	1	1915-16	1919
Arkansas.....	1	1915-16	1919
California.....	1	1915-16	1919
Illinois*			

* Illinois requires a five-year course, including a preliminary year in physics, chemistry and biology, of all applicants for license to practice medicine in that state who graduate after July 1, 1918.

Book Notices

SEROLOGY OF NERVOUS AND MENTAL DISEASES. By D. M. Kaplan, M.D., Director of Clinical and Research Laboratories of the Neurological Institute, New York City. Cloth. Price, \$3.50 net. Pp. 346, with illustrations. Philadelphia: W. B. Saunders Company, 1914.

The author, having already published several articles on serology, has now combined in one volume everything of value contained in these articles. The book is divided into four parts. Part 1 deals with technology. In the space of eighty-three pages he describes and pictures the technic of lumbar puncture as well as methods of examination and interpretation of findings, not omitting the gold-sol reaction of Lange. In this chapter, though brief, nothing of importance has been sacrificed. At its conclusion the author indulges in some reflections on the attitude of the serologist which laboratory workers may well consider. He believes that "every serologist learns, sooner or later, that no matter how conscientious his working methods are, a number of errors cannot be avoided with the Wassermann reaction, and that some of the positive reports submitted were unquestionably of negative material." The author advises, therefore, to regard the entire test as only of secondary importance in making a complete study of a case of syphilis. In his opinion the serologist's attitude is a greater factor in the value of a Wassermann reaction than is the standardization of the reagents. "The question of reliability resolves itself into this: A worker reports either too many positive Wassermann reactions in non-syphilitic persons, or too many negative reactions in those who were infected. Unless, therefore, the serologist determines on which side he intends to err, his results will, accordingly, be uncertain." He urges, therefore, never to diagnose syphilis in the laboratory, as the laboratory worker should not consider himself competent to give a final decision. He believes that only those serums should be reported as positive which have withstood every attempt at negativation. Further, to obtain an unbiased opinion from the laboratory, it is necessary to withhold the clinical findings in the case. He deprecates the attempts which have been made to increase the sensitiveness of the test by using methods that are calculated not to make the number of negative findings greater, but, on the contrary, to make the number of positives as great as possible. These methods, he thinks, are the result of laboratory overzealousness combined with insufficient clinical knowledge. From this point of view he criticizes Noguchi's modifications of the Wassermann reaction and also Hauptmann's *Auswertungs-Methode*, the last of which consists in the use of quantities so large that a positive result is eventually obtained in some non-specific spinal fluids. In concluding this section of the book the author admonishes clinicians to acquaint themselves with the views of the serologist before placing any confidence in his results. He warns clinicians against the "unerring" serologist, whom he considers a menace to physician and patient. In Part 2 the author discusses without bias the serology of nervous and mental diseases of non-luetic etiology. This constitutes a fairly complete summary of work done by himself and others.

Of greatest value to the neurologist is Part 3. Here the author displays a practical acquaintance with the diagnostic difficulties of nervous and mental diseases scarcely to be expected from a serologist. While it is impossible in this review to enter into details, we are compelled to state that the views expressed therein are on the whole sound and will meet the approval of neurologists. Part 4 is devoted to the therapeutic uses of salvarsan, its administration, dosage, technic, after-treatment, etc. This section comprises sixty-three pages and is complete in itself. No less praiseworthy is the addition at the end of the volume of seventy pages of bibliography, culled from the most important literature of the world. If it is permissible to use a common figure of speech, we may predict that Kaplan's book will find a public ready to receive it with open arms.

THE ART OF COMPOUNDING. A Text-Book for Students and a Reference Book for Pharmacists at the Prescription Counter. By William L. Scoville, Ph.G., formerly Professor of Theory and Practice of Pharmacy in the Massachusetts College of Pharmacy. Fourth Edition. Cloth. Price, \$3 net. Pp., 390, with 76 illustrations. Philadelphia: P. Blakiston's Son & Co., 1914.

This book is intended as a text for students in pharmacy and as a reference work for pharmacists at the prescription counter. Chapters are devoted to the prescription, nomenclature, mixtures, incompatibilities, sterilization and disinfection, biologic products, and the various forms in which pharmaceuticals are dispensed—such as emulsions, pills, tablets, ointments, suppositories, etc. The directions for pharmaceutical manufacturing processes are brief but for the most part clear. While intended primarily for students in pharmacy, the book should prove useful to a physician who dispenses if he has not taken a course in pharmacy. Little pitfalls which the dispenser is constantly liable to meet are pointed out and methods for overcoming them when encountered are discussed. In some respects the work is not up to date. For example, in the discussion of enteric coatings no reference is made to the formaldehyd-gelatin combination which has come into use of late years.

A HANDBOOK OF PSYCHOLOGY AND MENTAL DISEASE. For Use in Training Schools for Attendants and Nurses and in Medical Classes and as a Reference for the Practitioner. By C. B. Burr, M.D., Medical Director of Oak Grove Hospital (Flint, Mich.) for Mental and Nervous Diseases. Fourth Edition. Cloth. Price, \$1.50 net. Pp. 235, with illustrations. Philadelphia: F. A. Davis Company, 1914.

This manual is offered by its author for use in training schools for attendants and nurses. The expert psychologist who studies it will probably be able to analyze what the author intends to convey. The average attendant or nurse will be far beyond his depth after leaving page one. A new chapter has been added entitled "Symbolism in Sanity and in Insanity." It is practically a catalog after the Freudian concept of common objects and their sexual equivalents. The nurses will possibly find this entertaining. The reporting of numerous cases from the author's experience is interesting, and treatment is given in simple, easily understood language. It seems doubtful, however, whether a book of this character can have much of a field of usefulness.

THE ASPLEY COOKERY BOOK. Containing 503 Recipes for the Uric-Acid-Free Diet. By Mrs. John J. Webster and Mrs. H. Llewelyn. New Edition. Cloth. Price, \$1.40 net. Pp., 268. Philadelphia: P. Blakiston's Son & Co., 1914.

This is a guide for those who wish to avoid the use of meat and other substances containing uric acid or its precursors and yet secure palatable dishes somewhat resembling those cooked with heat. Little space is occupied with argument to sustain the peculiar practices of the followers of Haig, but the practical recipes are at once set before the reader. Much use is made of vegetables and nuts, and the directions are very explicit and seem calculated to secure good results. Some of the terms used will not be readily understood by American readers, being provincial English. Reference may be made to "coker" butter, which, however, appears to be a proprietary article although "coker" is used in England as equivalent to coco.

MENTAL DEFICIENCY (AMENTIA). By A. F. Tredgold, L.R.C.P., M.R.C.S., Consulting Physician to the National Association for the Feeble-Minded. Second Edition. Cloth. Price, \$4.25 net. Pp. 491, with illustrations. New York: William Wood & Co., 1914.

The revised edition of Tredgold's valuable book contains a new chapter dealing with mental tests and case-taking which is interesting and scientific. Many chapters have been entirely rewritten, bringing the work up to date. The subject of mental deficiency in its various phases, including the sociologic and medicolegal aspects, has been handled with great skill and conservatism. An admirable feature of the book is the willingness to give credit to those who deserve it, regardless of nationality. In common with most English authors, Tredgold makes use of simple phraseology, intelligible alike to specialist and general practitioner. We commend this work as one of the best short text-books on the subject in any language.

Miscellany

Health of Flax and Linen Workers

The government has issued the report of the Departmental Committee on humidity and ventilation in flax mills and linen factories. Reference is made to Dr. Legge's report based on 1,500 observations on the body temperature of the operatives in wet spinning rooms and humid weaving sheds during the summer of 1912. The figures so obtained, he thinks, "suggest that, continued for hours, day after day, and year after year, the effect would be likely in the long run somewhat to affect health. In other words, persons in an atmosphere where the wet-bulb exceeds 75 F. are working under adverse physiologic conditions." The investigations of the committee have shown that the conditions in wet spinning rooms might, without detriment to the process of manufacture, be improved in such a manner as to give additional comfort and better conditions to the persons employed. The existing regulations have done much in this respect, and in some mills had been carried out in a most exemplary manner; in others, however, there is ample room for improvement. It is at present required that in wet spinning rooms the difference between the dry and wet-bulb temperatures shall be not less than 2 degrees, and it might be thought therefore that this small difference is necessary for manufacturing purposes. The work might be carried on with a much wider temperature difference. It is impracticable in every instance to require that the temperature of the rooms should not exceed a given point. The committee is therefore of the opinion that whereas at all times ventilation conforming to the present standard of five volumes of carbon dioxide per 10,000 in excess of that in the outside air should be provided. Special requirements are called for when the wet-bulb temperature reaches 75 F., the point at which bodily discomfort begins. When this point is reached they recommended that means shall be taken to introduce 1,000 cubic feet of air per hour for every linear foot of trough installed in the room, the ventilation to be arranged so as to insure that the distribution is uniform throughout the room. With regard to linen weaving factories the committee states that for the manufacture of fine linens a difference of about 2 degrees between the dry and wet-bulb temperatures must be maintained, even at high temperatures. This in one sense is much to be regretted, for the records taken by the committee show that in summer the wet-bulb temperature frequently exceeds the limit at which bodily discomfort begins and above which long-continued work can hardly fail to be injurious. The results of their inquiries and experiments have compelled them to recognize that unless an important industry is interfered with in such a way as to risk loss of trade and its transference to other countries in which no special regulations for flax are in force, with its incidental hardships falling largely on the operative classes, work in a limited number of factories must continue under conditions causing bodily discomfort and possibly injury in the long run. On the other hand, the medical evidence points to the fixing of a definite limit of wet-bulb temperature at which artificial humidification should cease. The committee accordingly recommends that all artificial humidity (except such as was caused by the evaporation of cold water) should cease when the wet-bulb temperature reaches 80 F.

Safety and Sanitation Maxims and Observations

E. R. Hayhurst, in the *Monthly Bulletin of the Ohio State Board of Health*, presents the following drawn from speeches made at the recent Safety and Sanitation Conference held in New York City:

German unions penalize their own members for failing to observe health regulations within workshops.

Varnish works of Germany have been rendered practically free of odors by exhaust ventilation systems.

Children under 14 years of age cannot be taught ideas of foresight-to-be-remembered: therefore they are intellectually

irresponsible. Many of our ignorant foreign workmen are beneath the 14-year-old child in power of foresight.

Bad ventilation, heat, fatigue and night work lead to drowsiness, to accidents and to disasters to health.

Fourteen nations of Europe do not allow night work of any kind for women, and limit the kind and hours of day work.

Sanitary measures lead to efficiency, economy and contentment, as well as greater production and more wages.

The representatives of two of the largest lead and paint corporations in America stated that they had been able to make some of their plants so mechanically perfect as to be fool-proof against dangers of lead poisoning.

First aid in the Carnegie Steel Company's plants has reduced infections from 50 per cent. to 0.1 per cent.

It is five times as much to the interest of the employer as to that of the employee to promote welfare work.

There are 400,000 maimed and debilitated workers in the United States. In New York a special trade school and employment bureau has been started on account of this. In Boston, one company, employing 1,000 men, does not discharge its defectives, but fits the job to the man. They have noticed that heart diseases have not only been checked, but markedly improved within a few months' time. Through a well-regulated "first-aid" system this company has had no infections for two and one-half years.

The Carnegie Steel Co., by first-aid measures, has handled 8,000 cases of foreign particles in the eyes, with no infections.

The representative of a company employing 20,000 men said: "We use the physician to get to all of our people. We have found out that workmen will listen to advice and counsel from physicians even on industrial questions without the ever-present suspicion of some ulterior motive."

Mr. George B. Cortelyou, president of the Consolidated Gas Co., New York, stated that to the employee is due proper remuneration, good sanitation, relief when sick or injured, insurance for old age, and a guarantee of protection to his family after death. There must be no charity about this. The self-respect of both capital and labor must be maintained. This is necessary for future competition in business.

A Big Field for a Big Man

Sooner or later Congress will find it necessary to pass on the proposal that a United States Department of Public Health be established. The best medical opinion of America demands it. The American Medical Association has memorialized Congress in its favor. Calling the American Medical Association "the Medical Trust" will not serve the opponents of the proposed department. The fact remains that this Association is the great and influential medical body of the country and that its proposals carry enormous weight.

It is claimed that half a million Americans die yearly of preventable disease. The figure is doubtless under rather than over the mark. Health departments do lower the death-rate of city, state and nation. The work of the United States Public Health Service in California and New Orleans during recent outbreaks of the bubonic plague evidences its efficiency. The chief opponents of the proposed bureau seem to be medical men of the various smaller schools of practice.

The *Southern Medical Journal*, in its September issue, makes a proposal that will appeal very powerfully to the average American, indifferent to professional jealousies and unconcerned in the warfare of the schools. This Southern journal proposes that a public health department be created and Surgeon-General Gorgas, the man who fought the health battles of the Panama Canal and cleaned up "the Zone," be placed at its head.

The world knows the work of Surgeon-General Gorgas. Congress is about to give him the highest honors within its power. The American people rank him with Colonel Goethals. Should such a department, in the wisdom of Congress, be created, and its headship awarded by popular election, we prophesy that Colonel Gorgas would sweep the country from Calaveras County, California, to the Island of Nantucket, which is "east of down East."—*St. Louis Republic*.

Medicolegal

Physician Made Agent to Contract with Hospital for Care of Injured Employee

(*Omaha General Hospital vs. Strehlow (Neb.), 147 N. W. R. 846*)

The Supreme Court of Nebraska reverses a judgment which was rendered in favor of the defendant in this action which was brought to recover for the care and treatment for twenty-nine weeks of an employee who had been seriously injured. The court holds that when an employer, at the time his employee receives a serious bodily injury, calls his own regular physician and surgeon over the telephone and instructs him "to come and take care of the injured man," and at the time of giving such direction well knows that the injuries of his employee are of such a serious character as to render it necessary immediately to remove him to a hospital, and the physician at once responds and takes the man to a hospital, and for the purpose of inducing the hospital authorities to receive him states to them that the principal for whom he is acting will be responsible for the payment of the bill of the injured man, the employer is bound by such acts and declarations on the part of his agent, the physician.

Nor will the employer have any right to terminate his liability by subsequently giving notice that he will not be responsible for care and treatment "from now on," when the patient is yet incapable of being removed or discharged from the hospital without grave danger to his life or health. Under the circumstances it is an implied condition of the contract that the employer can terminate his liability to the hospital only by removing the patient, or when he can be dismissed by the hospital without serious danger to his life or health, or by showing that the injured man has means out of which the hospital can or should collect its pay.

Here the defendant did not direct the physician simply to administer first aid or to give emergency treatment, but he told him "to come and take care of the injured man." He did the proper and humane thing, just what any employer ought to do when an employee is lying helpless as the result of an injury received in his employment. He knew, as well as he knew anything, that the physician would at once take the injured man to a hospital, and, if he wanted to place any limitation on the physician's authority to bind him for services rendered by the hospital, then was the time for him to impose such limitation. In other words, when the physician took the injured man to the hospital and stated that the defendant would be responsible for his treatment, it was the same as if the defendant had himself taken him there and made that statement, and he had no more right to disaffirm what was done and said by the physician than if he had done and said the same things himself. After having unloaded his helpless employee on the hospital, he could not relieve himself from further liability by his own declaration, but it was rather his duty to pay the hospital charges up to that time and remove the man to some other place. Nor was it a case to expect the hospital to dispose of by giving notice to the poor authorities.

Admissibility in Evidence of Hospital Records

(*Ribas vs. Revere Rubber Co. (R. I.), 91 Atl. R. 58*)

The Supreme Court of Rhode Island holds that a hospital record is admissible in evidence in a personal injury case to show misconduct of the plaintiff at the hospital, preventing to some extent a satisfactory recovery from his injuries. More particularly, the court holds that in this case, where the plaintiff suffered a fracture of the left leg between the hip and the knee, the hospital record should have been admitted in evidence to show his unruly behavior and disobedience of the positive orders of the surgeons and nurses as to keeping quiet and refraining from movements which would be likely seriously to interfere with the proper adjustment and knitting together of the fractured bone.

The court says that it is not necessary that there should be any express statute or regulation creating the authority

or duty to make such a record. If the duty of making it devolved, under the rules and regulations of the hospital, on the person, say an intern, who made it, that is sufficient in that regard, and the source from which that duty originated is not material. Such duties may arise from the casual direction of a superior, or from functions necessarily inherent to the position which the recorder occupies.

In making a record of this character which shall be admissible in evidence it is necessary that the entries therein be made contemporaneously with the facts to which such entries relate. That, however, does not mean that a record must be made at the moment of the occurrence, but within such time thereafter as would reasonably make it a part of the transaction. The record in question in this case was kept by an intern or assistant surgeon at the hospital. It appeared to have been his business, as the recording official, to place on the record such facts relating to the patient as were communicated to him by his associates and subordinates, as well as those which came under his personal observation. It also appeared that the record in question was written up by him every third day. The court thinks that, taking into consideration the regular method in which these records were made and the apparent impracticability, in a hospital, of recording each event as it occurred, the facts relating to the plaintiff were recorded within such reasonable time as would make them a part of the transaction, and therefore contemporaneous within the meaning of that term. The record was not rendered inadmissible because some of the facts recorded were not within the personal knowledge of the recorder; neither because the facts reported to him and by him recorded were capable of proof by those making such reports, nor because the witnesses who made reports to the recorder had testified at the trial of the case. They were two distinct sources of testimony, each having a value independent of the other, and the defendant was entitled to the corroborative effect of the record on the testimony of the witnesses.

Second Physical Examination Should Be Allowed to Defendant Misled in First

(*Rief vs. Great Northern Railway Co. (Minn.), 148 N. W. R. 309*)

The Supreme Court of Minnesota holds that it is error in a personal injury case not to permit a second physical examination of the plaintiff, the defendant having been misled by the plaintiff in the first examination as to the injury claimed. The court says that compelling a plaintiff in a personal injury case to submit to a physical examination is largely within the sound discretion of the trial court. And where one examination has been had a refusal to grant a second will not ordinarily be sufficient grounds for a new trial. But the circumstances in this case were unusual. When the plaintiff was being examined physically by the defendant's physicians, one of them, in manipulating the injured arm, asked the plaintiff whether he had any pains elsewhere, and he answered in the negative. Consequently no effort was made to examine with a view to ascertaining any defect in the spine or sacroiliac joint, where the two medical experts of the plaintiff subsequently by their testimony located what they concluded to be the serious injury. Of course one familiar with personal injury actions knows that a defendant must be prepared to meet injuries and shocks to the nerves and nervous system; for they are almost always alleged and attempted to be proven. But these and other allegations involving the whole body must be considered reasonably when applied to the facts of each case. It was perfectly plain in this case that when the plaintiff was examined neither the defendant nor any of its medical experts, one of whom was the surgeon who set the arm and had the plaintiff under observation and treatment for a month, suspected that he suffered or would claim any evil results from his fall, except such as might be traced to the fractured arm. Moreover, during his examination the plaintiff himself, as above noted, led them to believe that none other was claimed. Wherefore the court holds that it was error not to permit a second physical examination of the plaintiff, and, because it was not done, grants the defendant a new trial, after a judgment had been rendered in favor of the plaintiff.

Society Proceedings

COMING MEETINGS

Amer. Academy of Ophthal. and Oto-Larynx, Boston, Oct. 19-21.
Amer. Assn. for Study and Prevention of Inf. Mortal., Boston, Nov. 12.
Amer. Public Health Association, Jacksonville, Fla., Nov. 30-Dec. 5.
Medical Society of Hawaii, Honolulu, Nov. 28-30.
Mississippi Valley Med. Assn., Cincinnati, Oct. 27-29.
Southern Medical Association, Richmond, Nov. 9-11.
Virginia Medical Society, Washington, D. C., Oct. 27-30.

NEW YORK ACADEMY OF MEDICINE

(Meeting held Oct. 1, 1914)

The President, DR. WILLIAM M. POLK, in the Chair

Wesley M. Carpenter Lecture: The Physiologic Equivalent of War

DR. WALTER B. CANNON, Boston: My original intention was to present an account of some of the recent investigations which we have conducted in the Harvard Physiological Laboratory, but the events of the past summer have presented a practical application of their results pertinent to present interest.

The doctrine of human development from subhuman antecedents has done much to unravel the complex nature of man in solving the puzzle of the details and conditions of anatomic structure and in accounting for functional peculiarities, but in no respect has biology contributed more to clarify our views than in throwing light on the ways of human behavior. The comparative study of the behavior of men and lower animals is making it clear that the springs of action are to be found in the influence of certain emotions which express themselves in characteristic instinctive acts. The combinations, anger-emotion with pugnacity-instinct, and fear-emotion with flight-instinct, are common to lower animals and to man. The major emotions, fear and anger, are peculiar in being accompanied by bodily changes which are probably more profound than those attending any other affective states. The parts of the organism peculiarly called into action in emotional excitement are glands and the smooth muscle of viscera. The pouring out of tears, the "cold sweat," the dilation of pupils, the erection of hairs, the pallor from contracted blood-vessels are well-known changes from the routine of life in organs not subject to voluntary control, but there are other important visceral responses in strong emotions. Observations with the Roentgen ray brought to my attention the fact that in animals any sign of rage, anxiety or distress would be accompanied by total cessation of the movements of the stomach and intestines. It has since been shown that the secretion of every one of the digestive glands, as well as the flow of bile, is stopped under great excitement.

These emotional alterations are directly wrought by the so-called sympathetic division of the visceral system. The adrenals are subject to the same impulses. When these glands are stimulated through their nerve supply they pour into the blood stream epinephrin, which has peculiar properties in relation to the organs to which sympathetic fibers are distributed. It is capable of evoking in these organs all the changes that are evoked by the sympathetic nerve impulses themselves. Experiments with the blood of "quiet" and "excited" animals demonstrated that the inhibitory influence of excited blood is in fact due to adrenal secretion and that, therefore, the adrenal glands were brought into action under strong emotions. This conclusion has been confirmed both in this country and in England. For many years it has been recognized that the injection of epinephrin brings about a liberation of sugar from the liver and thereby may increase the sugar content of the blood to such an extent as to produce glycosuria. It alters the distribution of blood in the body, depleting abdominal viscera, and flushing the heart, the lungs, the central nervous system and the limbs. It seems also to be an antidote for muscular fatigue. After these investigations the question arises, "Does the adrenal secretion poured out in emotional excitement likewise produce or cooperate in producing these same effects?" We have found

that from emotional excitement alone a greater or less degree of glycosuria results. The glycosuria fails to appear if the adrenals are removed. The establishment of glycosuria, therefore, implies help from the adrenal secretion. Epinephrin, besides checking the function of the digestive organs, drives out the excess of blood no longer needed there and forces it more rapidly through the heart, lungs, central nervous system and the limbs. It is significant that all these organs are intimately cooperative in vigorous muscular exertion. Small doses of epinephrin serve to restore fatigued muscles. These remarkable changes are involuntary, and hence it is pertinent to inquire as to their utility in either preserving the welfare of the organism or guarding it from injury. Underlying both fear-flight and anger-attack emotions is the instinct of self-preservation. Under circumstances demanding either flight or combat there is use of the great muscular masses in supreme and perhaps prolonged effort. The stored up sugar together with the adrenal secretion poured out under great excitement would place the muscles of the body unqualifiedly at the disposal of the nervous system. At the same time the difficulty which nerve impulses might have in calling the muscles into action are practically abolished. In harmony with this interpretation are the vascular changes wrought by the epinephrin in cooperation with sympathetic discharges which give to the parts called on for action a bounteous supply of blood. Forced respiration and "sweating" are also adaptive reactions directly serviceable in making the organism more effective in the struggle which fear or rage may involve.

The major emotions fear and anger exert an energizing influence which may lead to the accomplishment of extraordinary feats. Periods of intense excitement frequently yield a sense of overwhelming strength. These moments give intense satisfaction, and there is a fascination found in the critical dangers of adventure. For these reasons vigorous men go forth to seek danger and to run large chances of injury. In the major sports the conditions are favorable for the development of intense emotional excitement and for the exhibition of great feats of strength and endurance. Football with all the preparation and circumstances attendant on a great contest and the additional excitement furnished by the large crowds of spectators makes every member of a team realize his individual responsibility for the supreme, all important result—victory for his group. Last fall twenty-five members of the Harvard University football squad were examined directly after the game with Yale, and glycosuria was found in twelve of the men. Five of the twelve were substitutes who did not have a chance to play, and it was clear in the case of these athletes that the bodily responses were wholly analogous to those previously found as accompaniments of strong emotions in the lower animals. Furthermore, the changes in the men were quite as directly adapted to the powerful muscular efforts which their game demanded as were the similar changes which occurred in the lower animals and which were adapted to their occasional fierce struggles for existence. What is true of football is true to a lesser degree of such sports as rowing, running and hurdling. The analogy between fear and rage as exhibited in animals in their struggle for existence is analogous to those emotions in human beings which sometimes seize on individuals in groups and spread like wildfire into larger and larger aggregations of men, until vast populations are shouting and clamoring for war. The strength of the fighting instinct in man has been one of the main arguments of the militarists. They argue that the warlike qualities are essential to human welfare, and they must be occasionally exercised lest the people sink into self indulgence and become weakened and softened. War disciplines character, teaches men to be brave and patient, promotes virility and hardihood and renews the true order of life's values. These arguments are to-day strongly contested. War has become too horrible, it is conducted on too stupendous a scale of carnage and expenditure, it interferes too greatly with consecrated efforts to benefit all mankind by discovery and invention; it involves too much suffering among persons not directly concerned in the conflict; it is too vastly at variance with the methods of fair dealing

that have been established between man and man; the human family has become too strongly knit to allow some of its members to bring on themselves and all the rest poverty, distress and a long heritage of bitter hatred and resolution to seek revenge. There is then a war against war.

The situation reveals clearly the necessity of preserving the martial virtues. What is needed is not a suppression of these capacities to feel and act, but their diversion into other channels where they may have satisfactory expression. Henry James suggested as a moral substitute for war, service for the state in hard and difficult occupations, and believed that the thing needful was to inflame the civic temper as past history has inflamed the military temper. As an alternative to these assertions, since it has been shown that as a result of excitement the body goes on a war footing, a number of fundamental physiologic changes occurring, all of them adapted to the putting forth of supreme muscular and nervous power which was what primitive battle consisted of through countless generations, I would suggest international athletic contests, such as the Olympic games, which would do for our young men much that is now maintained as peculiar to the values of military discipline. They have further to commend them the high standards of honor and fairness in sport, its unfailing revelation of excellence without distinction of class, wealth, race or color; the ease with which it becomes an expression of patriotism; the respect which victory and pluckily borne defeat inspire in competitors and spectators alike; the extension of acquaintance which follows from friendly and magnanimous rivalry among strong men.

The evidence is perfectly clear-cut that pugnacious tendencies of men are invited by primitive emotions and are supported by fundamental physiologic changes that through eons of racial inheritance have given the body vigor for combat. No dull routine of drill, or any other deadening procedure, will call these energizing mechanisms into action. On the other hand, the hazards of hard-fought athletic contests stir the elemental excitements and mobilize the bodily forces just as the hazards of ancient war used to do. War and the preparedness for war nowadays have become too machine-like to serve as the best means of preserving and disciplining these forces. Bending the trigger finger is too trifling a business. The exhilarating swing and tug and quick thrust of the big limb muscles have vanished. There must be no emotion because it spoils the aim. If, then, the fighting abilities are to be continued, how much better to exercise them in natural rather than in artificial actions, how much more reasonable that men should struggle in the ancient ways, one against another, body and spirit, for victory in the supreme tests provided by the great games.

KENTUCKY STATE MEDICAL ASSOCIATION

Sixty-Fourth Annual Meeting, held at Newport, Sept. 23-25, 1914

The President, Dr. JOHN J. MOREN, Louisville, in the Chair

Renal Tuberculosis, Its Diagnostic Difficulties and Surgical Problems

DR. FILIPP KREISSL, Chicago: In a small number of cases in which we have recovered bacilli-carrying urine before nephrectomy, the bacilli disappeared permanently after the operation. Extensive vesical ulcerations oftentimes point to bilateral kidney involvements, but should not contra-indicate nephrectomy. We have seen extensive lesions heal spontaneously after the operation, and at other times a few small ulcerations required prolonged postoperative attention. By conservative surgery, unilateral or bilateral nephrotomy, and later ureterostomy, we can do a great deal to alleviate the torturing cystitis, reduce the septic fever, and prolong and make life bearable.

DISCUSSION

DR. CARL L. WHEELER, Lexington: In the last eight or ten years I have encountered sixteen cases of renal tuberculosis. Four were bilateral, twelve were unilateral. Of these there were nine females and two males. In ten cases the tuberculosis was on the right side, and in two on the left. Of

the bilateral cases three patients were operated, and of the near deaths three went down with lung involvement within six months. The other patients have had a stormy existence with hematuria, irritable and contracted bladder.

DR. J. GARLAND SHERRILL, Louisville: In 2 per cent. of the cases only do we find solitary involvement of the kidney. The age of the patients is usually from 20 to 30 years. This is an important point in diagnosis. The earliest symptoms are frequency of micturition and an increased amount of urine. The first symptom that calls the patient's attention to the condition is hematuria. The second, perhaps, is the painful urination or dysuria. Vesical tenesmus develops frequently after the tubercle bacillus passes down and with it pus products from the inflamed kidney. This occurs after there has been a breaking down of the kidney tissue in the calices and emptying into the pelvis of the kidney.

DR. IRVIN ABELL, Louisville: From experience gained in removing stones from the lower end of the ureter in tuberculous patients, as a rule I think it should be conserved. The operation which will give permanent relief is the one which should be done. A ureter that is left behind may not give permanent trouble and eventually clears up without requiring a secondary procedure.

DR. J. W. KINCAID, Catlettsburg: Three diagnostic points should excite suspicion as to a tuberculous condition being present. One is the presence of indigestion. The next is progressive loss of weight, however slight, coupled with a rise of temperature in the evening, with subnormal temperature in the morning. These will nearly always—at least in very many cases—point out a beginning tuberculous process somewhere.

DR. CURRAN POPE, Louisville: A word of caution is necessary regarding the danger of the general practitioner dismissing patients so frequently with a diagnosis of neurasthenia. Neurasthenia vera is, comparatively speaking, a rare disorder. Frequently such cases are really cases of latent tuberculosis.

Alcohol and the Public Health

DR. J. N. HURTY, Indianapolis, Ind.: Where squalor, immorality, bestiality and poverty exist, there alcohol and other drugs have sway. Insanity and crime trail after alcohol, and in its wake come ill health and disease. A high authority says 25 per cent. of insanity is due to syphilis; 10 per cent. is due to accident; 40 per cent. is hereditary, and 25 per cent. is due to alcohol. Farmers are great buyers of patent medicines. They generally have dyspepsia first. The dyspepsia comes from bad food, bad cooking and rotten teeth preventing proper mastication. When dyspepsia accepts the cordial invitation extended to it, and arrives with both feet, the victim rushes to patent medicines and finds fatuous relief in the alcohol they contain. Then diseases appear; for on top of the dyspepsia climbs alcoholism, and on it ride many kinds of disease. Alcohol is opposed to the public health, for it hurts any animal organism into which it is taken. It is not a food; it does not aid digestion; it does not further the good of the body; on the contrary it hurts. Its use as a beverage not only opposes personal health, but also the public physical and moral health, and also the public economic health. Alcohol is dope. For every dollar of revenue derived from alcoholic beverages \$2 of public cost for crime, insanity and delinquency is endured.

DISCUSSION

DR. VIRGIL E. SIMPSON, Louisville: Alcohol in quantities prescribed as carefully as you would prescribe drugs of any sort, and that have a potentiality for harm, is not only a therapeutic agent, but it likewise has a place as a food. The objection to the use of alcohol as a food is that patients continue the use of alcohol not as a food, but as a beverage.

DR. W. W. ANDERSON, Newport: Alcohol has a place as a drug. It should be put under the same restraint of law that applies to other narcotics, belonging to the same class as opium, chloral and chloroform.

DR. W. E. SENOUR, Bellevue: It is the duty of every physician to lend his assistance to study this question by scientific analysis, and to cast aside the false theories, the stupid

delusions, and false conclusions, and study for himself the laboratory experiments which are taking place throughout the land, and after doing so it is his duty in the interest of the children of this country and to posterity to carry the gospel to every home he visits.

DR. CURRAN POPE, Louisville: In the class of nervous and chronic invalids with whom I am thrown in daily contact, it would be suicidal to prescribe alcohol in any form. Occasionally in crises it seems as though it has been of some help, but in the ordinary everyday prescription for non-acute diseases, alcohol does not occupy a place. How many of you have the courage to tell a patient he shall not have your prescription refilled without the stamp of your approval? I never write a prescription of any kind that I do not stamp on it in red ink, "no copy, no repetition." We must be careful every time we write a prescription containing alcohol that we may not lay the foundation for alcoholism and for other drug addictions.

Uterine Myomata and Malignancy

DR. JOSEPH G. GAITHER, Hopkinsville: Uterine myomata are a serious menace to health, and although they may be quiescent for years, causing little trouble from either pressure or hemorrhage, yet they slowly poison the musculature of the heart. Uterine myomata should never be given a chance to become sarcomatous, but as soon as they reach sufficient size to give symptoms they should be removed.

Enuresis in Children

DR. N. W. MOORE, Cynthiana: Each case should be studied closely with an effort to find the cause or causes responsible for this condition, and in many instances when found the enuresis can be relieved or cured. If a careful examination shows that there is no malformation or central nervous lesion to deal with, the urine should be examined. A hyperacid urine should be treated by a milk diet and no meat, and the administration of potassium citrate after each meal. If the urine is alkaline, leave meat in the diet and give either hexamethylenamin or benzoate of ammonium in 4-grain doses after meals. After the urine has been brought to a normal condition, tincture of belladonna in increasing doses is the drug which will prove most valuable. It should be given a long time—from three to six months being required in some cases—for a complete cure. If the urine contains bacteria, hexamethylenamin should be administered; in mixed infection salol and possibly vaccine therapy.

Trachoma in Eastern Kentucky

DR. J. A. STUCKY, Lexington: Education should be more widely attempted by means of home-instruction, lectures, demonstrations, moving-picture shows, etc. Insofar as practicable each house should be restricted to the use of but one family, thus avoiding overcrowding. Hospital facilities should be provided for the reception of people suffering from severe trachoma. Sufficient authority should be granted to require them to undergo such treatment when they are a menace to the public health. In each infected sanitary district a dispensary should be provided for the treatment of cases of trachoma not requiring hospital care. A sufficient number of field nurses should be provided to administer, under the direction of the physician, home treatment and instruction to those who cannot be sent to the hospital or attend the dispensary. No children suffering from trachoma should be admitted to uninfected schools. Separate schools, where practicable, should be established for trachomatous children. All boarding schools where trachomatous pupils are admitted should be provided with adequate facilities for the care and treatment of trachoma, such facilities to include the permanent services of a nurse trained in the care and treatment of diseases of the eye.

Periodic Examination of Supposedly Well Persons

DR. EUGENE LYMAN FISK, New York City: The fact that an ordinary group of people, at an average age of 30, taken, not from a hospital, but from one of the leading business institutions of the world, is found suffering from so many disabilities which can be corrected, checked or cured, points

a way to sensible, practical and easy methods of distinctly raising the general level of the vitality and well being of the race, which so many people, even life-insurance experts, have thought was a fixed and unalterable quantity. It should be remembered, however, that while saving the unfit, we are also improving the so-called fit, which is a powerful influence in keeping ahead of the game.

(To be continued)

AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS

Twenty-Seventh Annual Meeting, held at Buffalo, Sept. 15-17, 1914

(Concluded from page 1321)

Myomectomy with Extensive Resection of the Uterus in Fibroid Tumors

DR. X. O. WERDER, Pittsburgh: A comparison of the mortality of hysterectomy and myomectomy would seem to be rather in favor of the latter according to my experience. Since 1898, inclusive, 707 cases of uterine fibroids have been operated on by me with a total mortality of 3.25 per cent. This does not include over a hundred cases in which small fibroids were removed coincident with other operations, but only those in which this neoplasm constituted the principal indication for operation. In these 707 cases, hysterectomy was performed 536 times and myomectomy 171 times. The total mortality in the latter cases is 4, or 2.33 per cent., while hysterectomy was accompanied by a death rate of 3.45 per cent., or more than 1 per cent. in favor of myomectomy. The morbidity of myomectomy also compares even more favorably with that of hysterectomy, as the myomectomy patients almost uniformly make a smooth, uncomplicated recovery, and almost without exception enjoy perfect health after the operation; they are, in fact, among the most satisfactory cases in my experience. I feel justified, therefore, in making a plea for more conservative treatment of uterine fibroids in younger women than they now receive.

DISCUSSION

DR. J. HENRY CARSTENS, Detroit: When a young woman has one or two fibroids, I perform myomectomy. If she has a number of small ones, I am inclined to remove the uterus. In some cases I have taken out one side of the uterus, about one-half, but have not tried systematically to save any uterine tissue by taking away half of it or one-quarter or three-quarters. It is a matter of very little consequence whether we take it all away or half of it, if the ovaries are intact. Whether or not this woman menstruates afterward is of no great moment, because I do not think menstruation is of benefit to these women. The question of ovarian secretion is all important, and if you leave the ovaries the woman will go on and never know whether the uterus is out or not, except that she does not menstruate every month.

DR. ROBERT T. MORRIS, New York: There is one important factor which we are apt to forget, and that is the patient herself. Ask her what she wants. I say to a patient who has these small masses, "If we do a myomectomy, remove a part of the uterus and leave a part, you will probably have a further development of this neoplastic growth because the original conditions persist. If you want me to leave a part with the possibility of having further-neoplastic growths develop, with the idea of having a child, all right." I leave it to the patient.

DR. HUGO O. PANTZER, Indianapolis: The importance of Dr. Werder's contribution lies in the fact that he has materially lessened the mortality by not removing the entire uterus. To me that is a very strong and sound argument in favor of myomectomy as against a more radical operative procedure.

DR. JULIUS H. JACOBSON, Toledo, Ohio: Last year, when abroad, I was impressed with the number of patients with sioughing fibroids who were operated on, patients in whom the Roentgen-ray treatment had been applied, so I came to the conclusion that these cases treated with the Roentgen ray

give a larger mortality than if we operate on these patients when the fibroids are smooth, when we can do myomectomy or hysteromyomectomy.

DR. A. B. MILLER, Syracuse, N. Y.: I have had six cases of fibroid tumors in women of advanced age that have been treated with the Roentgen ray with very good results.

Abdominal Distention Following Operations on the Pelvic Viscera

DR. FRANCIS REDER, St. Louis: The most encouraging measures at our disposal are embodied in the stomach lavage and in the enema. The former should be used every four to six hours while the patient continues to vomit, whereas in the latter it may be said that our greater hope rests. The alum enema of Hardon, slowly introduced into the rectum every two hours, if necessary, has proved so efficacious that I have given it the preference over all enemas. The alum is not irritating to the bowel, so that a large number can be administered provided the nurse exercises gentleness.

Two Cases of Cancer of the Uterus Apparently Cured by Postoperative Infection

DR. JOHN W. POUCHER, Poughkeepsie, N. Y.: In both these cases the laboratory reports showed the disease to be adenocarcinoma, and in neither of them could I claim to have removed all the diseased tissues; consequently the cure must be attributed to some other cause, namely, the suppuration and the formation of a toxin that destroyed the cancer cells. There are areas of broken-down tissue filled with masses of dead cancer cells. The operation opened up fresh fields for their absorption. May we not have here a genuine auto-inoculation of dead or modified cancer germs? In the literature I find several instances of spontaneous cures of cancer, and several pathologists with whom I have discussed this subject say they have found post-mortem evidences of such cures.

Operations at the Home; When and Under What Circumstances Are They Justifiable?

DR. J. E. SADLER, Poughkeepsie, N. Y.: In my surgical work in the hospital covering a period of twelve years, 1902 to 1914, and with an average of 60 per cent. abdominal work, there was a mortality of 3.4 per cent. The average mortality during the past three years was 2 per cent. No attempt was made to exclude any properly operative case, and all patients dying in the hospital regardless of when or what complication were included. After a careful and exhaustive study of my results when operation was done at the home, covering the same period of twelve years, I find that the mortality is 4.3 per cent. When we consider that the cases in which operation was performed at home represent the severest type, and that the performing of elective surgery at the home was discouraged, I think that the foregoing statistics, covering several thousand hospital and home cases, in about 20 per cent. operation being performed at home, speak for a fair amount of safety for the home operation.

Treatment of Puerperal Thrombophlebitis

DR. JAMES F. BALDWIN, Columbus, Ohio: I have had four cases with one death. Williams advised ligation of the veins only, while Jellett resected the involved veins. I recommend instead hysterectomy with ligation of the arteries only, the veins being left wide open for drainage into a gauze fluff which fills the pelvis and is brought out through the vagina, the sigmoid being sutured all around to the pelvis so as completely to isolate the peritoneal cavity. This gives the fullest drainage with the least trauma, and removes the original source of infection.

Resection of Ovaries

DR. ALBERT GOLDSPOHN, Chicago: This procedure is almost wholly an incidental or auxiliary one, to be done when abdominal section is needed for other reasons, chiefly for displacements of the uterus, freeing of adhesions, and removal of neoplasms from the uterus or its adnexa. The objections to it are theoretically (a) that all the hydropic graafian follicles and follicle cysts of any size do or may contain ova,

and, therefore, being physiologic structures, should be left alone. This assertion was soon proved to be unwarranted and untrue by numerous investigators of the histology. (b) That these follicle cysts and cystic corpora lutea cause no symptoms has been abundantly disproved by clinical experience by unbiased observers. Pain continues from such resected ovaries, too frequently, and secondary operations are too often needed for their removal. This has likewise been demonstrated to be untrue by several operators, aside from my own experience. According to newer studies, these follicle cysts and persistent corpora lutea sometimes give rise to hemorrhages, even of a fatal nature; likewise, they may furnish an atrium for infection by bacteria or neoplasms. In my paper I point out the kinds of ovaries that are best suited for resection and the feasibility of saving ovarian tissue from the wall of larger ovarian cysts. Elevation or suspension of ovaries to relieve venous engorgement is of equal importance and must not be omitted after resection. It is important to adopt a strictly aseptic technic and the use only of fine and readily absorbable suture material.

The following papers were also read: "Abdominal Drainage," by J. W. Keefe, Providence, R. I.; "Some Thoughts and Views on the More Common Gynecologic Conditions Necessitating Operation," by W. H. Humiston, Cleveland; "Some Observations on the Technic of Intestinal Anastomosis, with Special Reference to a Modification of Maunsel's Method," by F. D. Gray, Jersey City; "Mineral Springs of Saratoga," by D. C. Moriarta, Saratoga Springs, N. Y.; "Biliary Surgery," by J. F. Erdmann, New York; "Transverse Involution of the Colon; a Technical Step in the Short-Circuiting Operation," by R. T. Morris, New York; "The Statistics of Labor in Elderly Primiparas," by J. R. Freeland, Pittsburgh; "The Treatment of Abortion on the Basis of Its Pathology," by C. W. Barrett, Chicago; "Kinetic System and Treatment of Peritonitis," by G. W. Crile, Cleveland; "End-Results after Operation for Displacement of Uterus, Bladder and Rectum," by H. A. Wade, Brooklyn; "Ruptured Gastric and Duodenal Ulcer," by E. A. Vander Veer, Albany, N. Y.; "Repair and Reconstruction of Bile-Ducts," by J. H. Jacobson, Toledo, Ohio; "Pyloric Stenosis," by C. L. Bonifield, Cincinnati; "Treatment of Urinary Calculi Based on Chemical Composition," by C. B. Schildecker, Pittsburgh.

AMERICAN ROENTGEN RAY SOCIETY

Fifteenth Annual Meeting, held in Cleveland, O., Sept. 9-12, 1914

(Concluded from page 1323)

SYMPOSIUM ON GASTRIC AND DUODENAL DIAGNOSIS

Cinematography of the Stomach and Duodenum

DR. A. HOWARD PIRIE, Montreal: This process is so complicated that it is never likely to be a routine method of examination. Nevertheless, in certain cases it is worth the time, labor and expense. I use a specially constructed table, and make sixteen exposures on one plate for thirty-two seconds, insuring a complete stomach cycle. Taking the usual time as twenty-two seconds for a stomach cycle, I get eleven views of the stomach during the twenty-two seconds. These are for practical purposes sufficient to show all the movements of the stomach in order to form a diagnosis. I make cinematographic views of doubtful cases.

Negative Diagnosis of Surgical Lesions of Stomach and Cap

DR. LEWIS GREGORY, New York: In thirty cases in which operation was performed by nineteen different surgeons, and in which a negative diagnosis of ulcer or cancer of the stomach or cap had been made solely on the roentgenologic findings in not a single instance was a lesion demonstrated by the surgical exploration. In twenty-nine out of the thirty cases the surgical findings corresponded with the Roentgen findings in every essential detail, but in one case they differed to such an extent that it was impossible to explain the difference.

Observations from the Study of a Thousand Gastro-Intestinal Cases

DRS. ARIAL W. GEORGE and ISAAC GERBER, Boston: Gall-bladder disease is detected either by showing an enlarged gall-bladder, adhesions to the duodenum, gastric antrum, hepatic flexure or transverse colon, and, finally, by the direct demonstration of gall-stones. Care must be taken that the parts are quiet; not only must the patient himself be still, but the plates must be taken rapidly enough so that the entire gall-bladder is at rest in the true sense of the word. A large number of plates must be taken. Frequently the very last plate of a series will be sufficient to make a positive diagnosis of stones, when all the others merely gave "suspicious" evidence.

We believe that all gall-stones will show on the Roentgen plates. In every single case in which gall-stone plates were later carefully studied we were always able to see the shadows of the gall-stones. The trouble was not with the Roentgen method. The trouble was with our own acuteness of observation at the time of the preoperative diagnosis. The problem of the future, then, is to learn to recognize these shadows which the Roentgen rays will surely produce. When this can be done, then 100 per cent. of gall-stone diagnoses will be made.

DISCUSSION

DR. L. T. LE WALD, New York: There are cases of pylorospasm which we must recognize, and many of them are surgical conditions, because they cannot be relieved unless the pylorus is divided. I have seen five such cases. I do not believe that these cases are associated with chronic appendicitis, as is generally supposed. I think some of these cases are neuropathic in origin.

DR. GEORGE C. JOHNSTON, Pittsburgh: I like to examine these cases fluoroscopically first, and then make roentgenograms. I think that with Dr. Pirie's method we should be able to get better results than we have heretofore.

DR. A. F. HOLDING, New York: The amount of indefiniteness and inaccuracy in this work varies directly as to the amount of time spent on the examination.

DR. A. M. CRANE, Kalamazoo, Mich.: It has been said here that all gall-stones would have a shadow on the plate, but that has not been my experience. If we have a pure cholesterol stone, it cannot be seen on any plate, because it does not offer any resistance to the ray different from the tissues around it.

DR. GEORGE E. PFAHLER, Philadelphia: I do not think that any one ever asserted that all gall-stones could be shown. Our present technic does not enable us to do that. As to the pure cholesterol stones, only 0.5 per cent. of all gall-stones are of that type, and about an equal number are pure calcium carbonate stones. The composition of the stone, the weight of the patient, and the density of the tissues all enter into the question. Gall-stones are more frequent in some localities than in others, and the calcium content is probably also greater in some localities than in others, just as is the case with kidney stones. But I am sure we shall all find more gall-stones if we will look for them more carefully.

DR. E. H. SKINNER, Kansas City, Mo.: I do most of my work fluoroscopically, although I do make roentgenograms in every case so as to be able to show the doctor something of the case. It is not easy to describe the full scope of the possibilities of the fluoroscope. Many of the conclusions arrived at by serial roentgenography could also be obtained with the fluoroscope.

DR. F. J. PALMER, Rochester, N. Y.: A year and a half ago I started in doing fluoroscopic work, and now eight-tenths of my work, whether I make a negative or a positive diagnosis, is made with a screen entirely.

Operative Indications in Gastro-Intestinal Lesions: A Study of One Hundred Cases in which the Roentgenologist was Present at the Operation

DR. LEON THEODORE LE WALD, New York: The roentgenologist after determining the organic nature of a lesion, such as hour-glass deformity of the stomach, should not rest there. He must go further. He must determine the exact size and shape of each pouch, the time it takes each pouch to empty,

whether or not any other lesion, such as ulcer, is present in some other part of the stomach or duodenum, and he must ascertain the condition of the remainder of the digestive tract. On the accuracy of his findings, the kind and extent of operative procedure will largely depend. If he has overlooked a pyloric stenosis (even though it be only spasmodic), and a surgeon performs only a gastrogastrostomy, instead of a gastro-enterostomy, the result will not be a complete cure. Likewise, if the surgeon operates without a complete Roentgen examination having been made, or without due consideration of all aspects of the findings, the best results may not be obtained. In fact, the closest cooperation between the roentgenologist and the operator is essential to the securing of the best results to the patient. It is even wise, if possible, for the roentgenologist to be present at the operation, in order that his opinion may be obtained on doubtful points which may arise in complicated cases during the course of the operation.

Early Diagnosis of Pulmonary Tuberculosis

DR. FRANK S. BISSELL and DR. ERNEST T. F. RICHARDS, Minneapolis: Pulmonary tuberculosis should be suspected in all cases presenting obscure symptoms suggesting a low-grade intoxication. The Roentgen method offers the only possible means of diagnosis in these cases, and the only means of immediate corroboration of the Roentgen diagnosis at present available, is the subcutaneous tuberculin test. While, for many reasons, it would be a desirable consummation to eliminate the tuberculin test and rely entirely on the objective signs offered by the Roentgen rays, this is not practicable until we have very definite proof that such signs are pathognomonic. The present series of cases offers some evidence that there are pathognomonic Roentgen signs of this disease, but this evidence must be supported by a great many more controlled cases. All Roentgen signs of disease must be founded on a sound pathologic hypothesis. Hilus tuberculosis is usually secondary to a focus in the lung. The primary focus may occupy any area in the lung field, but is particularly prone to elect certain points near the apex of any lobe.

Roentgen Studies of Acute Small Intestine Obstruction

DR. JAMES T. CASE, Battle Creek, Mich.: Owing to the gas and fluid distention of the bowel it is possible to differentiate roentgenologically between acute obstruction in the small or large bowel at a glance without giving the patient any opaque salt by mouth. Judging by the disposition and relations of the distended coils one may estimate closely where in the small bowel the obstruction has occurred. No harm has been noted in cases in which barium by mouth was used, and where the case is under observation for several hours, it is helpful to administer a few drams of bismuth. The barium enema will aid in the recognition of intussusception and colonic obstruction. The progress of an obstruction may be estimated by comparing roentgenograms made at successive observations when diagnosis is in doubt. Operation is not unnecessarily delayed in any of these cases for the examination need not occupy more than a very few minutes. The patient is simply lifted onto the stretcher and carried to the Roentgen-ray room. There the stretcher is transferred to the horizontal fluoroscope, the proper field found with the screen, a plate superimposed and a flesh exposure made. The patient is then returned to bed without further manipulation or inconvenience than is required to lift him onto the stretcher and back again.

DISCUSSION

DR. L. T. LE WALD, New York City: In a case of intussusception the clinical diagnosis located the lesion on the left side. A bismuth enema traveled all the way to the cecum and one could see the gas content of the distended loop of ileum overlapped by the injection. No tumor could be felt in this case even when the patient was anesthetized. The roentgenogram made it possible for the surgeon to make his incision directly over the intussusception. In another case the obstruction was easily shown in the roentgenogram at the ileocecal valve region, the small intestine being much dis-

tended. The cause was an acute appendicitis, producing an inflammatory exudate, which obstructed the lower ileum.

DR. H. K. PANCOAST, Philadelphia: I had one case in which I doubt that the diagnosis could have been made without the aid of a roentgenogram. The distended loops of intestine proximal to the site of obstruction in the small bowel easily located the lesion. In another case 5 pints of fluid had to be aspirated before anything at all was done toward obliterating the obstruction.

DR. PAUL EISEN, Chicago: In one case which I roentgenographed and located the seat of obstruction, the operation disclosed a band, $\frac{1}{8}$ inch thick and 4 inches long, extending across the abdomen and strangulating the bowel. In another case the small intestine was seen in the roentgenogram to be contained in a femoral hernia, causing intestinal obstruction. The obstruction was relative, not absolute.

DR. JAMES T. CASE, Battle Creek, Mich.: In a number of cases the loops of bowel were filled with fluid above the bismuth. Much can be learned by studying the gas-distended coils of intestine.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Public Health, Boston

August, IV, No. 8, pp. 633-720

- 1 Applications of Water Analysis. E. Bartow, Urbana, Ill.
- 2 Value of Routine Water Analysis in Sanitary Surveys. H. E. Barnard, Indianapolis.
- 3 Alaskan Eskimo. J. A. Watkins, Washington, D. C.
- 4 Relation of Public Health to Race Degeneracy. J. H. Kellogg, Battle Creek, Mich.
- 5 All Typhoid of Community for Five Years from Carrier Through Milk. H. W. Hill, London, Ont.
- 6 Analysis of Cost Keeping as Applied to Municipal Management of Street Cleaning. F. C. Bamman.
- 7 Recent Progress in Methods and Character of Street Cleaning. S. Whinery, New York.
- 8 Uniformity in Annual Reports of Local Boards of Health. F. L. Hoffman, Newark, N. J.
- 9 Period of Incubation of Diphtheria Cultures. H. Albert, Iowa City, Ia.
- 10 Use of Hypochlorite Capsules for Treatment of Small Quantities of Drinking Water. H. A. Whittaker, Minneapolis.

September, No. 9, pp. 721-818

- 11 Chemical and Bacteriologic Study of Wrapped Bread. B. R. Jacobs, J. A. LeClerc and M. L. Mason, Washington, D. C.
- 12 What States and Cities of United States Are Doing in Public Health Education Work. H. Greeley, Brooklyn.
- 13 Pottery Industry and Its Relation to Tuberculosis. H. R. M. Landis, Philadelphia.
- 14 Sewage Disposal Problem in Villages and Small Cities. G. C. Whipple, Boston.
- 15 Scarlet Fever. E. H. Place, Boston.
- 16 Relation of Biologic Therapy to Public Health. G. H. Krall, New York.
- 17 Yellow Fever in Mexico. E. Liceaga, Mexico City.

Annals of Otolaryngology and Laryngology, St. Louis

June, XXIII, No. 2, pp. 273-522

- 18 *Anaphylactic Reactions Occurring in Horse Asthma and Allied Conditions. J. L. Goodale, Boston.
- 19 Intranasal Operation for Relief of Nasolacrimal Stenosis. E. M. Holmes, Boston.
- 20 Evolution of Tonsillotomy. S. A. Friedberg, Chicago.
- 21 Chronic Influenza of Nose and Throat. L. B. Lockard, Denver.
- 22 Study of Vincent's Angina. J. J. Richardson, Washington, D. C.
- 23 Case of Cavernous Sinus Thrombosis Complicating Suppurative Labyrinthitis. A. Braun, New York.
- 24 Nasopharyngeal Myxosarcoma; Several Operations and Final Spontaneous Recovery. E. F. Ingals, Chicago.
- 25 How Patient Can Help Himself in Cases of Chronic Catarrhal Otitis Media. S. H. Lutz, Brooklyn.
- 26 Two cases of Sarcoma of Dura Mater Arising in Vicinity of Mastoid Process, with Vague Symptoms Simulating Mastoiditis. J. F. Barnhill, Indianapolis.
- 27 Case of Latent Mastoiditis Complicated by Toxic and Irritative Cerebral Symptoms, Blindness and Streptococcemia. S. Kopetzky, New York.
- 28 Sinus Operation: Resection of Internal Jugular Vein; II. Id. Ligation of Internal Jugular Vein. M. D. Lederman, New York.
- 29 Nitrate of Silver Applied within Mouth of Eustachian Tube for Relief of Tinnitus. W. C. Braislín, Brooklyn.
- 30 Temporoparietal Abscess Secondary to Chronic Suppurative Otitis Media. J. M. Ingersoll, Cleveland.

- 31 Diffuse Serous Labyrinthitis Complicating Acute Purulent Otitis Media. E. Danziger, New York.
- 32 Case of Simultaneous Bilateral Cavernous Sinus Thrombosis Twelve Hours after Simple Mastoid Operation. I. Friesner, New York.
- 33 Cerebellar Abscess. C. E. Perkins, New York.
- 34 Meningitis without Definite Symptoms Occurring Late in Mastoidectomy Convalescence. G. E. Steel, New York.
- 35 Variations of Sphenoid Sinus Disease. G. M. McBean, Chicago.

18. Anaphylactic Reactions in Horse Asthma.—In five patients with horse asthma the application of horse-serum to an abrasion of the skin produced within a few minutes sharply localized edema and reddening. In three of these cases the introduction of horse-serum in the nose caused edema of the nasal mucous membrane, together with profuse watery discharge and sneezing. One case of horse fever without asthma gave a delayed reaction to the nasal test (although this was reported and Goodale cannot vouch for it), but was negative for the skin test. A similar case gave a delayed but definite reaction to the skin test, but showed no nasal symptoms. Four of the horse-fever cases without asthma were negative for both tests. It is worth noting that in two cases, one patient who had horse asthma, reacted markedly to both tests, the other patient whose vasomotor symptoms from horses affected the nose alone, showed no reaction. Six cases of bronchial asthma and five cases of hay-fever were negative for both tests. Three cases without vasomotor symptoms which had received immunizing doses of antitoxin several months previously showed no reaction to the tests.

The results of Goodale's experiments indicate that a localized anaphylactic reaction from horse-serum may be occasioned in certain individuals who experience asthmatic disturbances from the neighborhood of horses. The severity of these vasomotor symptoms appears to be a determining factor in the production of the reaction, since patients with nasal symptoms alone do not appear to be sufficiently sensitized to horses to give an immediate positive skin test.

The number of cases thus far tested is, in Goodale's opinion, too small to justify definite conclusions in regard to the value of these tests in detecting the existence of a state of sensitization to horse-serum, but if further studies should confirm them they should prove to be of assistance to the physician who is in doubt whether in a given case it is safe to administer antitoxin. It is therefore suggested by Goodale that a preliminary skin test with horse-serum be made in all patients who have previously received an injection of antitoxin derived from horses, whether tetanus, diphtheria or plague serum. Furthermore, in all patients who are about to receive antitoxin for the first time, inquiry should be made as to whether they have ever been disturbed by asthmatic symptoms when in the neighborhood of horses, and if so they should first be tested. So far as these experiments go, they would indicate that in horse asthma a dangerous anaphylactic shock may occur after the hypodermic administration of horse-serum. In horse fever with nasal symptoms alone, this danger is less or not at all to be feared, and in other types of asthma and of vasomotor rhinitis it is not present.

Annals of Surgery, Philadelphia

September, LX, No. 3, pp. 281-408

- 36 *Course of Acquired Disease of Thyroid and Principles which Seem to Control Its Progress. J. Rogers, New York.
- 37 How Shall Clinician Interpret Wassermann Reaction? W. H. MacKinney, Philadelphia.
- 38 *Pathology, Diagnosis and Treatment of Seminal Vesiculitis. B. A. Thomas and H. K. Pancoast, Philadelphia.
- 39 *Treatment of Bladder Papilloma by High Frequency Destruction. A. A. Uhle, Philadelphia.
- 40 Clinical Manifestations of Polyps of Male Urethra. A. Randall, Philadelphia.
- 41 *Method of Treating Adherent Perforating Ulcer of Posterior Wall and Lesser Curvature of Stomach. E. Archibald, Montreal, Que.
- 42 Congenital Pyloric Stenosis. A. J. Walton, London.
- 43 Diffuse Lymphango-Endotheliomatous Growths of Peritoneum. T. S. Tirumurti, Madras, India.
- 44 *Tumor at Meatus Urinaris in Female. B. Tenney, Boston.
- 45 Traumatic Intra-Acetabular Separation of Pelvic Bones (Epiphyseal Diastasis in Acetabulum.) H. Neuhof, New York.
- 46 *Preparation of Dry Bony Areas for Skin Grafting. C. H. Mayo, Rochester, Minn.
- 47 Thumb Forceps to Facilitate Anastomosis. A. N. Collins, Duluth, Minn.

36. Acquired Disease of Thyroid, Principles Which Control Its Progress.—Rogers has observed sixty-two patients who applied for relief after one or more partial thyroidectomies. Only the minority had failed to show any benefit and a considerable part of this minority stated that they were worse than before the operation. An analysis of all these cases, however, has failed to yield any definite rules for avoiding poor results. Thirty-eight, for example, showed the presence of exophthalmos, and twenty-four did not, though some of them said that it was present formerly. Tachycardia was present and so had not been relieved in thirty-five. Eight of these were later subjected to more extensive thyroidectomy and five were thus cured of their rapid heart action. If enough of the gland is ultimately removed, or removed in successive stages, the pulse-rate can evidently be reduced, but it probably cannot be reduced by removing more than two-thirds of the gland at once. The worst results, in these sixty-two cases seemed to have occurred in subjects who were operated on before they had attained their maximum growth and development; that is, before the age of 25, and in those who had small goiters.

All of the sixty-two patients complained of a greater or less amount of asthenia, or inability to expend the normal amount of mental and physical energy, and a considerable majority showed a blood-pressure above 140 mm. of mercury, and it is noticeable that the few Rogers has been able to follow have from year to year shown a more or less steady increase in their blood-pressure. A large proportion of these cases have shown some signs he interprets as those of hypothyroidism, although many in conjunction with the hypothyroidism have presented a more or less constant tachycardia.

With the exception of the few successful, or partially successful, secondary thyroidectomies, the only treatment which Rogers has found beneficial in these cases has been rest in combination with organ therapy. The most frequently useful agent, especially for those with high blood-pressure, has been the adrenal proteins which contain no adrenalin. The pituitary, the thymus or the pancreas have seemed indispensable for the relief of others. The indications for the particular organ have been ascertained by experiment in each case. A few seemed most relieved by a combination of thyroid with some other organ feeding.

The impressions derived from these experiences are summed up as follows: That partial thyroidectomy is to be especially avoided in patients who have not completed or have just completed their growth and development; that it is to be avoided in symmetrically enlarged thyroids as these seem peculiarly prone to relapse even after a considerable period; that it is to be avoided in subjects of the very "nervous" type; that patients with marked exophthalmos of long duration bear any operation badly and can seldom be more than moderately improved.

38. Seminal Vesiculitis.—Thomas and Pancoast claim that chronic seminal vesiculitis is a far more prevalent disease than the average physician surmises, and masquerades under a manifold symptomatology, finding its expression oftentimes remote from the urinary tract; the inflammation is invariably due to a mixed infection, from which in its chronic state it is commonly impossible to isolate the gonococcus. The disease, analogous to pus-tubes in the female in many respects, presents serious and similar problems from the standpoint of treatment, and is not accorded the consideration that its medical importance demands. The particular treatment in any given case should depend on the anatomico-pathologic state of the vesicles, ejaculatory duct and vas deferens. This can be determined by proper vesicular palpation, massage and microscopic examination, supplemented when necessary by vasopuncture and collargol radiography. Experienced massage will in the majority of patients suffice to effect a cure in due time; in many, however, massage having proved ineffectual, convalescence may be accelerated by vasopuncture, vasostomy and direct medication of the seminal vesicles; in certain cases, not so few as may be imagined, seminal vesiculotomy or vesiculectomy should and must be performed if these patients are to be cured or relieved of their annoying symptoms.

Bilateral vasopuncture and collargol medication has resulted at least in the temporary cure of a number of cases of persistent chronic seminal vesiculitis. Collargol roentgenograms in a series of normal and pathologic cases have demonstrated, (a) by comparisons *in vivo* and *in vitro*, the graphic portrayal of an ejaculatory duct sphincter; (b) the intimate relationship between the ureter and seminal vesicle, whereby ureteral irritation and urinary obstruction may occur in the event of an enlarged and inflamed vesicle; (c) the presence of stricture or obstruction of the vas; (d) congenital anomalies of the vesiculæ seminales; (e) inflammatory enlargements of the vesicles, especially loculated collections of pus or seminal pyovesiculosis.

39. **High Frequency Treatment of Bladder Papilloma.**—A brief analysis of Uhle's eight cases shows that hematuria, intermittent or constant, is the most prominent, frequently the only symptom present. It is also interesting to note that it was of a terminal type in two cases. That hematuria, unfortunately, is still regarded as a disease, and not a symptom of some condition, usually a severe one, of some part of the genito-urinary tract, is evidenced by the fact that most of the patients were treated internally for some time, and no attempt was made definitely to locate the cause and site of the hemorrhage. The symptomatology is at times misleading, as symptoms may be referred to one organ, when the actual source of disease is another.

Uhle states that high-frequency destruction of benign growths of the bladder is a very effective method of treatment, even when the bladder is extensively involved. Recurrences are frequent after any method of treatment, therefore cystoscopic examinations at stated intervals should be advised in every case of bladder papilloma. The immediate effects in malignant growth of the bladder are apparently good, as is shown by the diminution in the size of the growth and cessation of hemorrhage, but a cure should not be expected; at least, this has been his observation with these few cases.

41. **Treatment of Perforating Ulcer of Stomach.**—When in July 1913, a case came under Archibald's care, in which excision was practically out of the question, and a posterior gastro-enterostomy was impossible on account of adhesions, he carried out an exclusion of the ulcer-bearing area by tying off the stomach above the ulcer with a fascial strip taken from the anterior sheath of the rectus, passed through a slit in the great omentum, about 1 cm. above the upper limit of the inflammatory mass. On tightening the ligature and securing it with a few silk stitches, the stomach was found to be tied off about its middle, forming an artificial hour-glass stomach. An anterior gastro-enterostomy was performed in the cardiac half of the stomach at a point of the jejunum about 12 inches from the duodenojejunal juncture. The stoma was about 2 inches above the greater curvature, about a third of the way from the greater to the lesser curvature. The abdomen was closed without drainage.

A bismuth meal was given during the last week in August. After four hours, a trace of the bismuth was seen at a point toward the pyloric side of the ligature, and it was thought that the ulcer must have burrowed through and established some slight communication with the cardiac half of the stomach. It became clear at post mortem that this must have been a slight overflow of the bismuth through the opening afforded by a partial yielding of the fascial ligature.

In view of the persistence of symptoms, and the progressive loss of weight and strength of the patient, the abdomen was reopened through the old scar August 28. There were extensive adhesions of the wall of the stomach and the jejunal loop, together with the gastroduodenal and gastrophrenic omenta to the anterior abdominal wall. These were all freed, though with some difficulty. It was found that the anastomosis was patent for two fingers at least; that the band of fascia was apparently holding and that the distal portion of the stomach was slightly distended, although not abnormally so. The ulcer was buried in adhesions high up under the ribs, and the cardiac portion of the stomach seemed to bulge over toward the midline so as partly to cover the area. It was impossible to tell whether the ulcer had burrowed its way into the proximal part of the stomach or not.

It was decided to do a second gastro-enterostomy as near the greater curvature as possible. Owing to the difficulty of pulling the stomach forward from under the ribs, it was impossible to get a stoma of more than $1\frac{1}{4}$ to $1\frac{1}{2}$ inches. This operation failed to relieve the patient's pain or vomiting, and she went steadily down hill, vomiting several times a day, and occasionally vomiting a good deal of blood—sometimes pure blood. On September 5 a jejunostomy was done under local anesthesia, for the purpose of feeding. In the evening after the operation she had a large hematemesis. This was repeated on the second day following, and on September 7 she died of inanition and hemorrhage.

The post mortem revealed an ulcer of large size, almost quite round, with thickened walls, and over its floor coursed a large vessel in which was found an opening large enough to admit a small probe. Clearly it was from this point that the repeated hemorrhages had come. The gastro-enterostomy openings were healed and patent. The fascial ligature had yielded to the extent of admitting the tips of three fingers in the opening joining the cardiac with the pyloric portions. The ulcer measured 5 cm. in both diameters, and the tissues of the stomach wall were thickened to the extent of about $1\frac{1}{2}$ cm. The wall was perforated at the base of the ulcer, and the bed was formed by the pancreas. The pancreatic substance itself was not invaded. The cardiac half of the stomach showed a pouching below the two gastro-enterostomy openings, somewhat analogous to the pouching of the bladder behind an enlarged prostate, and this clearly accounted in part for the retention of the stomach contents.

44. **Tumor at Meatus Urinarius in Female.**—According to Tenney there are six conditions under which tumor may appear at the female meatus. Papillary adenoma—dysuria, pain with physical contact, sometimes slight bloody staining. Not larger than 1 cm., and usually smaller, usually single, varying shades of red, attached on one side of canal and usually the posterior, uncommon, except between 15 and 40 years, rarely malignant, frequently recur after removal. Prolapse of dilated ureter—dysuria, pollakiuria. Tumor cyst like a flaccid mucous membrane, "size of thumb" or less, appearing either within a few weeks of birth or after months or years of vesical irritation and one-sided symptoms. Probe can be passed all around the pedicle except for one spot. Sometimes mouth of ureter can be identified. Constant tenesmus. Prolapse of bladder tumor—hematuria, dysuria, pollakiuria. Size and structure must vary. Rare in children. Tumor follows long train of bladder symptoms. Prolapse of urethra—symptoms like papillary adenoma except for absence of pain and tenderness. In one case came out $\frac{5}{8}$ of an inch. Prolapse of bladder mucosa—only recorded case had symptoms corresponding to intravesical stricture and dilatation of ureter followed by appearance of a fold of mucous membrane at the meatus. Prolapse of bladder wall—pain, tenesmus, spasm and incontinence at intervals preceding appearance of tumor. Tumor "size of cherry" to "size of duck's egg," tender, purple, pyriform in shape, bleeding on handling. Sometimes ureteral orifices can be identified on the back of tumor. May be reducible or not. May occur in infants as results of imperfect sphincter apparatus or in adults after injury to same.

46. **Preparation of Dry Bony Areas for Skin Grafting.**—By means of a small drill Mayo perforates the entire dry area of bone like a sieve, or cribriform plate, all over its surface. These perforations are about $\frac{1}{25}$ of an inch apart and penetrate to the diploe of the skull or to the blood-supply of the bone involved so that each perforation shows a slight hemorrhage. Through these perforations, granulations are rapidly thrown out and soon merge together on the surface, allowing an abundant blood-supply for the skin grafts.

Archives of Internal Medicine, Chicago

September, XIV, No. 3, pp. 289-452

48. Second Progress Report of Thompson-McFadden Pellagra Commission. J. F. Siler, P. E. Garrison and W. J. MacNeal, New York.

49. *Relation of Pellagra to Use of Certain Foods and to Location of Domiciles in Six Selected Industrial Communities. J. F. Siler, P. E. Garrison and W. J. MacNeal, New York.

- 50 *Nitrogen and Sulphur Metabolism in Cretin. I. Greenwald, New York.
- 51 *Lymphocyte Increase and Altitude. M. E. Stains, T. L. James, Colorado Springs, Colo., and C. Rosenberg, New York.
- 52 *Glycyl-Tryptophan Reaction in Meningitis. R. H. Major, San Francisco and E. Nobel, Vienna.
- 53 *Elliptical Human Erythrocytes. F. W. Bishop, New York.
- 54 *Pituitary Gland in Epileptics. J. F. Munson and A. L. Shaw, Sonyea, N. Y.
- 55 *Specific Role of Foods in Relation to Composition of Urine. N. R. Blatherwick, New Haven, Conn.

49. Relation of Pellagra to Use of Certain Foods.—The authors summarize the results of their very extended investigation as follows: Pellagra spread from a preexisting case as a center in the six villages studied. It was transmitted to new victims only through very short distances and chiefly to those immediately associated in the home with a preexisting case of the disease. Frequent use of corn-meal as an article of diet was not a factor in the causation of pellagra in these villages. There was discovered no evidence that canned goods have anything to do with the causation of pellagra. Frequent use, even daily use, of fresh meats and of eggs afforded no relative protection from pellagra in these villages. The daily use of milk seemed to diminish to some extent the danger of contracting pellagra in these mill villages in 1912 and 1913, although its use did not fully insure against the development of the disease.

50. Nitrogen and Sulphur Metabolism in Cretin.—Examination of the results of Greenwald's examination show few deviations from the normal. The absorption of nitrogen is poor. The ratio of ammonia nitrogen to total nitrogen is rather high. The creatinin output is very low, and a considerably greater amount of creatin is excreted. Aside from these the findings seem to be quite normal.

51. Lymphocyte Increase and Altitude.—The authors assert that at an elevation of 6,000 feet the larger lymphocytes are absolutely increased in the circulating blood by at least 20 or 30 per cent. in both man and monkey. The basophilic mononuclear elements in the blood of man at sea-level are approximately 34 per cent., and at 6,000 feet are about 42 per cent. The total white blood-cells per cubic millimeter are approximately the same at sea-level and at an altitude of 6,000 feet, namely, about 7,500. The total polymorphonuclear cells diminish in the exact proportion in which the mononuclear cells increase. The red corpuscles increase by 22 per cent. at an altitude of 6,000 feet.

52. Glycyl-Tryptophan Reaction in Meningitis. — The authors feel that in glycyltryptophan they have another valuable addition to our diagnostic measures in meningitis. In cases having a peptolytic index higher than 1 they have consistently found meningitis present. Only one case of tuberculous meningitis showed an index as low as 1. The striking variations in peptolytic powers which were observed from time to time makes it probable that cases showing a low index might at some time have shown a much higher one. Also there was noted an interesting tendency for the peptolytic powers of the cerebrospinal fluid to increase as the disease progressed.

53. Elliptical Human Erythrocytes.—The patient whose blood was studied by Bishop gave a typical history of acute appendicitis. No lesions of heart, kidneys or lungs were discoverable. Operation was performed two hours after the patient entered the hospital and a gangrenous appendix with a small amount of seropurulent fluid free in the abdomen, was found. Recovery was uneventful, the temperature being normal on the seventh day after operation and the patient being discharged cured on the tenth day.

During his stay in the hospital a careful study of his blood was conducted. About 75 to 80 per cent. of the erythrocytes were observed to be elliptical in outline. The proportion between the long and short diameters of these cells varied considerably, some of them being only slightly elliptical, while others were very distinctly elongated. The fragility of the erythrocytes was determined and found normal. Vital staining showed only 3 per cent. reticulated cells.—well within normal limits. The Wassermann reaction was negative. The possibility of this condition being a congenital characteristic of the man's blood suggested itself. Working

on this theory the blood of his sister was obtained and was found to show an exactly similar condition. A few of them showed a more extreme deformity than those of her brother. As far as she could remember she had never had a sick day in her life.

The other members of the family—a second sister, her father and her two children (both boys)—were found to have normal erythrocytes; the mother of the patient is not living. To exclude the possibility of some chronic poisoning by lead, coal-gas, or other chemical, the blood of all persons living in the same house with this family was examined and found to be normal.

54. Pituitary Gland in Epileptics.—For some time the authors have been collecting material which might cast some light from an anatomic point of view on the conditions of the ductless glands in epilepsy. The thyroid and pituitary glands were the only ones showing any great change in appearance; both of these showed more or less variation from what might be considered an average or normal type.

The sella turcica has not as a rule been enlarged; ordinarily the gland has completely filled it. There has, however, been a distinct group of cases in which there has been a marked difference between the size of the sella and the size of the gland. In these cases the dura is seen pouched down into the sella, instead of the more usual flat membrane between the clinoid processes. When this pouching is found, the gland may be flattened (scaphoid) in shape, but small glands or large fossae may also account for the condition in different cases. In only one such case have they taken measurements of the sella; they were as follows: between anterior clinoid processes, 28.3 mm.; between posterior clinoid processes, 17.5 mm.; between optic foramina, 19.8 mm.; from optic foramen to posterior clinoid process, 15.5 mm.; width in sagittal plane, 15.5 mm.; depth, 16.6 mm. The gland itself in this case (A 416) measured 17.5 by 15.5 by 4.7 mm. The woman in whom this was found was decidedly fat; ovaries small and fibrous, uterus unicornus; age at death 44 years. Also, in a case of internal hydrocephalus, a much-pouched dura was found.

The twenty-two glands recorded in this paper appear to be somewhat below the average in size. No large tumors of the pituitary were found, but in three cases large tumor-like structures have been found. There were no clinical symptoms in any of these cases; the condition was not suspected, and thus significant clinical conditions may have escaped notice. One of the most striking variations in the appearance of sections of the pituitary is variation in the blood-content of the gland. In many cases it considerably exceeds the normal. All degrees are present and an uneven distribution of the congestion is not uncommon. No particular cell type can be said to predominate in the glands examined. There are occasionally glands in which the cyanophil cells are considerably more common than the average. There is also a distinct tendency toward an increase of connective tissue in the region between the neuroglial and glandular portions.

55. Foods in Relation to Composition of Urine.—According to Blatherwick the composition of the urine is markedly influenced by the character of the food intake. Foods which have a preponderance of basic elements lead to the formation of a less acid urine. Conversely, foods with a predominance of acid-forming elements increase the urinary acidity. Potatoes, potato ash, oranges, raisins, apples, bananas and cantaloups are very efficient in reducing the acid output. Tomatoes are of less value in this respect. Rice and whole-wheat bread increase urinary acidity. Plums, prunes and cranberries, although yielding a basic ash, nevertheless increase the acid formation. The latter foods contain benzoic acid, which increases the acidity owing to the formation of hippuric acid. An increase in H^+ is accompanied by a significant increase in the ammonia excretion. The authors' results indicate that ammonia exerts an unmistakable influence in the preservation of body neutrality. Titratable acidity and H^+ are closely related in behavior. A lack of relationship between H^+ and urine volume is pointed out. The solubility of uric acid in urine is closely dependent on the H^+ . All urines with an acid reaction are supersaturated with

uric acid, while alkaline urines are capable of dissolving added uric acid. Further evidence for the interrelationship of the alveolar CO₂ tension and the H⁺ of the urine is submitted and their dependence on diet is pointed out. The H⁺ of the urines of thirty vegetarians was 6.64, in contrast with the value of 5.98, reported by Henderson and Palmer, for persons living on a mixed diet.

Arkansas Medical Society Journal, Little Rock

September, XI, No. 4, pp. 93-112

- 56 Tumors of Breast. St. C. Cooper, Fort Smith.
- 57 Vesicovaginal Fistula. A. Watkins, Little Rock.
- 58 Conservation Versus Stimulation in Treatment of Shock. C. S. Holt, Fort Smith.

Boston Medical and Surgical Journal

October 1, CLXXI, No. 14, pp. 509-544

- 59 Demand and Supply as Related to Nurses and Nursing. F. T. Murphy, St. Louis.
- 60 Roentgen Ray Evidence in Early and Latent Cancer of Stomach. F. W. White and R. D. Leonard, Boston.
- 61 Traumatic Endocarditis. S. G. Webber, Brookline.
- 62 *Intraspinal Use of Salvarsanized Serum. C. W. McClure, Iowa City, Ia.
- 63 *Report of Cases of Lung Abscess at Massachusetts General Hospital. C. L. Scudder, Boston.
- 64 Behavior of Neosalvarsan. W. J. McGurn, Boston.

62. **Intraspinal Use of Salvarsanized Serum.**—In four cases of cerebrospinal lues under treatment by McClure with intravenous injections of salvarsan, mercurial inunctions and the intraspinal use of salvarsanized serum, there has been observed improvement in the subjective and objective symptoms. With this improvement there has occurred a diminution in the cell count, the proteid content, and the strength of the Wassermann reaction in the cerebrospinal fluid. The Wassermann in the blood remained unaffected up to the time of leaving the hospital. Two cases of tabes were relieved of subjective symptoms and the number of cells in the cerebrospinal fluid reduced. A case of taboparesis showed no change in the laboratory findings and only slight improvement symptomatically. One case of paresis showed marked improvement in the symptoms and the laboratory findings. The Wassermann reaction became negative in the cerebrospinal fluid. One case of paresis showed no improvement in either the symptoms or the laboratory findings but grew progressively worse.

The results in cerebrospinal lues and tabes in the small series of cases studied in this hospital and those collected from the literature are encouraging not only as regards cessation of symptoms but also in the laboratory findings in the cerebrospinal fluids. The results in paresis are either discouraging or problematic. The most marked improvement has occurred in the laboratory findings and in these there has been a relapse in those cases followed for several months. McClure here admits that the improvement in mentality so far recorded may be but the result of remissions to which the disease is prone, even in the absence of treatment. But the fact that improvement may occur, even if only apparent, warrants the use of the intraspinal treatment in a disease otherwise hopeless.

63. **Cases of Lung Abscess.**—The details of sixteen cases of lung abscess treated by operation are reported by Scudder. He states that the bronchiectatic process should be attacked by the surgeon while it is limited to one lobe of a lung. There was one case of actinomycosis cured by surgical operation. Attention is attracted to lung abscess following tonsillectomy. There is one case in this series which followed operation on the nasal septum. Scudder suggests that the inhalation of foreign material may have been the starting point in this case. From certain cases in this series it is suggested that the surgeon should be alert to the occurrence of lung abscess associated with embolism following ordinary surgical operations. A patient suddenly suffering severe pain in the chest following surgical operation associated with a rise in temperature and pulmonary signs should be very carefully studied lest such signs may mean the beginning of pulmonary abscess. Early operative interference on the lung in such cases may not only preclude the possibility of the

extension of a pulmonary lesion, but may save the life of the individual.

An increasing number of intra-abdominal infections are associated directly with an infection through the diaphragm of the diaphragmatic pleura, and then of the lung with pulmonary abscess. The cases of subdiaphragmatic origin must be attacked early to prevent subsequent damage intra-thoracically. The Roentgen ray is of great value in the diagnosis of lung abscess. The thorough roentgenologic examination necessitates fluoroscopic observations, stereoscopic plates, and both anterior and posterior views. Scudder believes that this total series of sixteen cases demonstrates the efficacy of surgical measures in the treatment of abscess of the lung. There were nine deaths, eighteen recoveries and eleven cases were practically well without cough or sputum.

Journal of Parasitology, Urbana, Ill.

September, 1, No. 1, pp. 1-53

- 65 *Destruction of Vitality of *Cysticercus Bovis* by Freezing. B. H. Ransom, Washington, D. C.
- 66 *Two Years' Study of Insects in Relation to Pellagra. A. H. Jennings, Washington, D. C.
- 67 Variation in *Oxyurias*: Its Bearing on Value of Nematode Formula. S. B. Fracker, Chicago.
- 68 Eggs of *Ascaris Lumbricoides*. W. D. Foster, Washington, D. C.
- 69 Dr. Nott's Theory of Insect Causation of Disease. W. A. Riley, Ithaca, N. Y.
- 70 Rhabditin. N. A. Cobb, Washington, D. C.
- 71 Experimental Ingestion by Man of *Cysticerci* of Carnivore Tapeworms. M. C. Hall, Washington, D. C.
- 72 Peculiar Morphologic Development of an Egg of Genus *Tropidocerca* and Its Probable Significance. W. D. Foster, Washington, D. C.
- 73 Action of Arsenic Dips in Preventing Tick Infestation. H. W. Graybill, Washington, D. C.
- 74 *Eorhynchus*: Proposed New Name for *Neorhynchus Hamann* Pre-Occupied. H. J. Van Cleave, Urbana.

65. **Destruction of *Cysticercus Bovis*.**—From his experiments Ransom concludes that if measly beef carcasses are exposed for six days to a temperature not exceeding 15 F. (—9.44 C.) the vitality of the cysticerci will be destroyed; that some may survive in carcasses exposed for five days to this temperature, though it is doubtful whether they will retain sufficient vitality to develop in the human host, and finally that a considerable proportion may survive in carcasses exposed to a temperature of 15 F. for four days or less. Though it is possible that the vitality of the cysticerci, which were observed to be alive after exposure of the infested beef to a temperature of 15 F. for four days, has been so seriously affected that they would have been incapable of producing tapeworm infestation, the fact that they were alive and active justifies the adoption of a longer period of retention when refrigeration is employed as a sanitary measure. Likewise it would seem, notwithstanding the evidently weakened condition of the only cysticercus which survived in beef exposed five days to a temperature of 15 F., that it is not justifiable to accept five days as a safe period for refrigeration, and that six days should be required until it shall be shown that a shorter period of refrigeration is fully sufficient to prevent the possibility that cysticerci present in the refrigerated meat may retain enough vitality to continue their development in the human host. On the basis of the results which have been herein recorded, an amendment to the federal meat inspection regulations has been issued providing that beef carcasses showing a certain slight degree of infestation may be passed for food if held for six days at a temperature not exceeding 15 F., as an alternative to the requirement of retention for twenty-one days.

66. **Study of Insects.**—Jennings' studies have led him to believe that ticks, bedbugs, mosquitoes, fleas, horseflies, and, in the absence of further and more incriminating evidence, lice may be dismissed from consideration as transmitters of pellagra; that there is not only insufficient evidence to incriminate flies of the genus *Simulium*, but much evidence directly opposed to such incrimination, and that the biting stable-fly, *Stomoxys calcitrans*, shows in marked degree those characteristics of distribution, habit and association with man which would preeminently fit it to be the vector of pellagra if transmission of the disease by a blood-sucking insect is shown to be possible.

**Journal of Pharmacology and Experimental
Therapeutics, Baltimore**

September, VI, No. 1, pp. 1-146

- 75 *Control of Respiratory Exchange by Heating and Cooling Temperature Centers. H. G. Barbour and A. L. Prince, New Haven, Conn.
- 76 *Action of Drugs on Isolated Pulmonary Artery. D. I. Macht, Baltimore.
- 77 Influence of Temperature on Action of Strophanthin on Mammalian Heart. J. W. C. Gunn, London.
- 78 Condition of Sugar in Blood. C. L. v. Hess and H. McGuigan, Chicago.
- 79 *Pharmacologic Action of Opium Alkaloids. D. E. Jackson, St. Louis.
- 80 Combined Action of Camphor and Lack of Oxygen on Isolated Mammalian Heart. A. N. Richards, Philadelphia.
- 81 Convulsant Action of Acid Fuchsin in Cardiotomized Frogs after Removal of Anterior Lymph Hearts. D. R. Joseph, St. Louis.
- 82 Influence of Lymph Hearts on Action of Convulsant Drugs in Cardiotomized Frogs. J. J. Abel and B. B. Turner, Baltimore.
- 83 Vascular Response of Kidney in Acute Uranium Nephritis. W. deB. MacNider, Chapel Hill, N. C.

75. Control of Respiratory Exchange.—Barbour and Prince found that heating the region of the corpus striatum in rabbits results in a diminution in CO_2 output, O_2 combustion and in the respiratory volume, as well as in decreased body temperature. Cooling the same region gives precisely the opposite effects. These measures have no demonstrable effect on the respiratory rate except that the first mentioned may produce marked "heat polypnea." The decreased and increased oxidations thus produced by respectively heating and cooling the temperature centers are contributing causes rather than effects of the changes in body temperature. These results furnish proof that metabolic processes can be diminished by an agent (heat) whose activity is, under the conditions of the experiment, restricted to a limited region of the central nervous system. Heat centrally applied reduces body temperature therefore not only by favoring heat dissipation but by diminishing heat production.

76. Action of Drugs on Pulmonary Artery.—The action of a large number of drugs on strips and rings of surviving pulmonary arteries was studied by Macht. Epinephrin causes a powerful constriction of the pulmonary artery. After ergotoxin and a number of other drugs, the action of epinephrin on the isolated artery is inhibited. These observations speak strongly in favor of a vasomotor supply of the pulmonary artery. Of the digitalis bodies, all except digitonin produce constriction. The latter causes a dilatation of the pulmonary ring. The nitrites were found to produce a constriction of the pulmonary artery. It is suggested that this anomalous action of the nitrites is due to the pulmonary artery being richly supplied for the most part with vasoconstrictor nerve terminals. This action of the nitrites is corroborated by other experimental and clinical data, and points to a rational method of treating hemoptysis.

79. Pharmacologic Action of Opium Alkaloids.—While only a part of the opium alkaloids have been studied by Jackson, enough was demonstrated to indicate that probably a considerable majority of these derivatives are capable of producing marked bronchoconstriction.

Lancet-Clinic, Cincinnati

September 19, CXII, No. 12, pp. 305-332

- 84 Overweights. H. A. Baker, Pittsburgh.
- 85 Glands of Internal Secretions. B. Holmes, Chicago.
- September 26, No. 13, pp. 333-360
- 86 Surgical Treatment of Infantile Palsy. J. K. Young, Philadelphia.
- 87 Work of Life Extension Institute Viewed Especially from Standpoint of Medical Examiner. A. T. Gaillard, Philadelphia.
- 88 Nature's Method in Cure of Tuberculosis. W. J. George, Johnstown, Pa.

Medical Record, New York

October 3, LXXXVI, No. 14, pp. 573-614

- 89 Surgical Management of Pericystitis. E. Fuller, New York.
- 90 Insanity Among Jews. A. A. Brill and M. J. Karpas, New York.
- 91 *Rational Diet for Typhoid. E. E. Cornwall, Brooklyn.
- 92 Oil-Ether Colonic Anesthesia. J. T. Gwathmey, New York.
- 93 Infection of Middle Ear with Bacillus Tuberculosis and Bacillus Coli. G. B. Lake, Jolo, Moro, P. I.
- 94 Abdominal Aneurysm as Cause of Left-Sided Abdominal Pain. E. H. Goodman, Philadelphia.
- 95 Country Physician and Congenital Club Foot. J. C. Schapps, Butte, Mont.

91. Rational Diet for Typhoid.—Cornwall has devised a plan of feeding in typhoid which is formulated in three dietetic prescriptions with modifications. Prescription 1, for the febrile period: At 6, 8, 10 a. m., 12 m., 2, 4, 6 and 8 p. m., give 8 ounces of a 2 to 1 mixture of milk and barley water, to which has been added 4 grains of sodium chlorid. At 9 a. m. and 5 p. m., give 7 ounces of orangeade made with the strained juice of 1 orange, 1 ounce of milk sugar and water. At any time during the day or night give water to drink but not more than enough to bring the total fluid ingested to 110 ounces, unless the weather is very warm and the patient desires it. If the patient has a weak heart the fluid should not exceed 90 ounces. This prescription supplies daily about 50 gm. of protein and fuel of the value of about 1,350 calories.

Prescription 2, for the transitional period: At 6 a. m. and 4 p. m., give 8 ounces of a 2 to 1 milk and barley water mixture, to which has been added $\frac{1}{2}$ ounce of a predigested cereal food, 1 ounce of cream and 4 grains of sodium chlorid. At 7 and 11 a. m. and 5 p. m., give 7 ounces of orangeade. At 8 a. m., 12 m. and 6 p. m., give 7 ounces of well-boiled rice, cream of wheat, or similar cereal, with 5 ounces of milk and 4 grains of sodium chlorid. At 10 a. m., 2 and 8 p. m., give 8 ounces of artificially soured milk, or, if preferred the same as at 6 a. m. This prescription supplies daily about 70 gm. of protein and fuel of the value of about 2,100 calories. It can be given in the average case between the fifth and seventh day after defervescence.

Prescription 3, for the convalescent period: At 7:30 a. m., give 8 ounces of well-boiled cereal, with butter, milk or cream; 2 slices of dry toast, with butter; the juice of 1 orange, plain, or as in prescription 1. At 10 a. m., 4 and 10 p. m., give 8 ounces of artificially soured milk, or 8 ounces of the milk and barley water mixture described in prescription 2. At 12 m., give 8 ounces of a milk soup (cream of corn, celery, potato, carrot or spinach), or 8 ounces of artificially soured milk; 2 ounces of lean boiled, broiled or roasted beef, mutton, lamb or chicken; 6 ounces of boiled macaroni or rice, with butter, milk or grated cheese; 2 slices of toast with butter; fresh fruit juice, namely, of orange, grapefruit, grape or pineapple, to the amount of 4 ounces. At 6 p. m., give 16 ounces of milk in which has been crumbled 6 ounces of old bread or toast; or 4 slices of toast with butter, 2 ounces of cream cheese or pot cheese and 8 ounces of the milk and barley water mixture described in prescription 2. Orangeade, as in the preceding prescriptions, or similar fruit juice preparations, may be given freely at any time.

This prescription supplies daily about 90 gm. of protein and fuel of the value of about 2,500 calories. It serves as a standard convalescent diet which can be modified by additions and substitutions as convalescence progresses. It can usually be given on the twelfth day after defervescence. The fruits and vegetables should be added cautiously, especially those containing much cellulose. The plan of feeding in typhoid above described was employed by Cornwall in a series of 200 cases of that disease treated by him between June 15, 1910, and Aug. 12, 1914. This series is continuous. The number of deaths was eighteen; the mortality 9 per cent.

Mississippi Medical Monthly, Vicksburg

June, XIX, No. 2, pp. 23-44

- 96 Classification Diagnosis of Acute and Chronic Arthritis. J. B. Elliott, Jr., New Orleans.
- 97 Infantile Fermentative Diarrhea: Some Hygienic and Preventative Methods. H. M. Burnham, Moss Point.

New York Medical Journal

October 3, C, No. 14, pp. 649-696

- 98 Modern Warfare Against Tuberculosis as Disease of Masses. S. A. Knopf, New York.
- 99 Non-Operative (Tuberculin) Treatment of Tuberculous Glands of Neck. R. T. Morris, New York.
- 100 Effect on Blood-Pressure of Decapsulation of Kidney. E. H. Goodman, Philadelphia.
- 101 Postdiphtheritic Paralysis. W. M. Barton, Washington, D. C.
- 102 Los Angeles Bronchitis. J. A. Guthrie, Portsmouth, Va.
- 103 Acute Intestinal Obstruction. H. M. Armitage, Chester, Pa.
- 104 Expert Testimony from Standpoint of Lawyer. A. M. Holding, West Chester, Pa.
- 105 Quantitative Estimation of Albumin in Urine. M. Kahn and M. Silberman, New York.
- 106 Newer Teachings Concerning Disease of Gastro-Intestinal Tract. M. I. Knapp, New York.

**Old Dominion Journal of Medicine and Surgery,
Richmond, Va.***September, XIX, No. 3, pp. 77-119*

- 107 Pyelitis in Children: Cause of Obscure Fever. F. H. Smith, Abingdon.
- 108 Plea for Early Clinical Diagnosis of Cancer of Rectum and Recto-Sigmoid Junction. B. C. Willis, Richmond.
- 109 Ureteral Calculus. L. T. Price, Richmond.
- 110 Rheumatic Fever—Cardiac and Renal Complications. O. C. Brunk, Richmond.

Texas State Journal of Medicine, Fort Worth*September, X, No. 5, pp. 179-214*

- 111 Subconjunctival Injections. H. W. Woodruff, Joliet, Ill.
- 112 Double Cataract Operations Under Difficulties. E. H. Vaughn, Tyler.
- 113 Amblyopia Due to Tobacco and Alcohol. C. Joyes, Fort Worth.
- 114 Tobacco Habit: World-Wide Injury to Humanity. A. S. Garrett, Springtown.
- 115 *New Sign Differential Between Dilatation of Heart and Pericarditis with Effusion. W. J. Calvert, Dallas.
- 116 *Adrenals in Acute Infections. G. C. Kindley, Galveston.
- 117 Case of Banti's Disease, with Splenectomy, Death. R. L. Ramey, El Paso.

115. New Sign Between Dilatation of Heart and Pericarditis with Effusion.—The differential sign described by Calvert in THE JOURNAL, Aug. 22, 1910, p. 763, is as follows: In pericarditis with effusion the right lobe of the liver is low, varying in its position from the fifth interspace to the sixth rib; in dilatation of the heart the right lobe of the liver is high, varying in position from the fourth to the fifth rib. In each condition a narrow area of relative lung-liver dullness is present. Two cases of pericarditis with effusion are reported to confirm the clinical value of this sign.

116. Adrenals in Acute Infections.—Kindley believes that examination of the adrenals in patients dying of acute infectious diseases furnishes strong evidence in favor of the theory of adrenal insufficiency as an important factor in bringing about a reduction in blood-pressure and feebleness of heart action in many of these cases. He states that there is great need of further investigation on the part of clinicians, as to the value of epinephrin in raising blood-pressure and supporting the heart in acute infections, the indications for the use of the drug in these diseases and the best method of administration.

Vermont Medical Monthly, Burlington*September, XX, No. 9, pp. 221-242*

- 118 Anoci-Association. G. W. Crile, Cleveland.
- 119 Intestinal Short Circuit for Intra-Abdominal Tubercles. Report of Case. G. S. Foster, Manchester.
- 120 Infantile Paralysis. C. K. Johnson, Burlington.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Roentgen Ray, London*August, XIX, No. 3, pp. 83-118*

- 1 Curious Case of Spine and Hip Disease. C. Goulesbrough, London.
- 2 Radioscopic Compressor Diaphragm Based on Bucky Effect. G. Holzknacht, Vienna.
- 3 Diathermy—Its Production and Use in Medicine and Surgery. E. P. Cumberbatch, London.

British Journal of Children's Diseases, London*September, XI, No. 129, pp. 385-432*

- 4 *Cardiac Arrhythmia in Diphtheria. E. B. Gunson.
- 5 *Subacute Atrophy of Liver in Childhood. R. A. Chisolm.
- 6 Fatal Hemoptysis in Child Four Years Old. J. D. Rolleston and J. E. Robertson-Ross.

4. Cardiac Arrhythmia in Diphtheria.—Gunson's present paper is based on more than 750 polygraphic curves obtained from children under 10 years of age, in whom the diagnosis of diphtheria was confirmed bacteriologically: 120 cases were investigated. Polygraphic tracings were taken in all the severe cases, with a single exception, at least once a day from the time of admission. Twenty-five consecutive mild and moderately severe cases were traced on alternate days throughout their stay in hospital, a period varying from five to eight weeks, in order to determine the incidence and the nature of the arrhythmia in this type of case. Antitoxin.—

Mild cases received on admission 8,000 units, cases of moderate severity 12,000 to 16,000 units, severe cases 16,000 to 20,000 units. In moderate and severe cases the antitoxin was repeated once or twice. Intramuscular injections were given in each case. The records were taken with a Mackenzie polygraph. By this means simultaneous tracings of the jugular and radial pulses were obtained with a time-marking record. The observations were made about the same time each afternoon.

Apart from normal sinus arrhythmia, the only type of irregularity met with in these cases was due to premature auricular contractions, which occurred in 28 per cent. of cases. They appeared as early as the ninth and as late as the sixty-sixth day of disease; their average duration was three days. They produced only slight arrhythmia and were ignored in treatment, as they were unaccompanied by any other symptoms or signs of cardiac involvement. Three cases, fatal from toxemia, developed no arrhythmia. Five cases developed so-called "cardiac paralysis," with gallop rhythm on auscultation, cardiac dilatation, hepatic enlargement and marked arrhythmia. This arrhythmia was due to the presence of frequent premature contractions, and in two cases these were followed by paroxysms of tachycardia. The nature of the arrhythmia is discussed in each case, together with the other physical signs present at the time.

5. Subacute Atrophy of Liver in Childhood.—Of the nine cases collected by Chisolm five were girls and four were boys, so that, unlike the acute form of the disease which is commoner in females than in males, there was no marked inequality of sex distribution, but of course the number of cases is very small. Jaundice was present in every case and was usually the first symptom to attract attention. In one case in which the jaundice was deep, the liver picture was that of acute necrosis attacking a liver previously affected with subacute necrosis. It would appear, therefore, that the depth of the jaundice is more or less proportional to the acuteness of the changes in the liver. The jaundice when once established usually tended to become progressively deeper. In two cases there was a history of previous attacks of jaundice.

Ascites was present in three cases. In two of these cases the changes in the liver were of the chronic type, approaching the cirrhotic, and the regenerative processes were widely diffused through the organ, while in the third case regeneration was limited to a small area in the left lobe, and the rest of the organ showed the microscopic picture of acute yellow atrophy. In none of the reports of these three cases is there mention of the condition of the portal vein or its branches.

The liver was somewhat enlarged at some period of the disease in all except one case in which it was normal to percussion, but slightly reduced in size at the necropsy, and another case in which it was not palpable during life and was reduced in bulk after death. In another case there is no note as to the size of the organ during life, but after death it was small. The enlargement was not always to be detected during life; it was usually regular, but in one case the left lobe was more affected than the right. Progressive diminution in size, which is such a marked feature in the acute type of the disease, and of considerable diagnostic importance, was noted in two cases and in both the diminution followed a previous increase in size. In one case the liver was enlarged to palpation on admission, but at the subsequent operation, eighteen days later, it was found to be normal or slightly reduced. The spleen was noticed to be slightly enlarged in one case, just palpable in another case and not palpable in a third case. In the other cases there is no note of its condition during life. Of the more general symptoms abdominal pain was of inconstant occurrence. Its absence is expressly recorded in one case while in three cases it was present with intermissions, and was never very severe in character. Vomiting was recorded in two cases in which it was severe. Light-colored motions were the rule, but neither diarrhea nor constipation was a marked feature of the series. Hemorrhages, which are so notable a symptom in the acute form of the disease, were only seen in two cases in which, while regenerative changes were present in the liver, acute necrosis

predominated. The temperature was noted as regularly and slightly subnormal in one case, high in two cases, normal in one case and irregular in one case in which, however, there was also present a general staphylococcal infection.

Drowsiness with death in coma was seen in two cases, while delirium was a terminal symptom in one case. Screaming and twitching followed by coma with localized paresis of the face and leg on the left side are recorded of one case but nervous symptoms were expressly noted as absent in another case and in none of the cases do they appear to have been very prominent. In all cases in which it is alluded to the urine contained bile; leucin and tyrosin, so often found in the acute type of the disease, were noted as absent in one case and in the other cases no mention is made of them.

British Medical Journal, London

September 19, II, No. 2803, pp. 493-524

- 7 Open-Air Hospitals in War-Time. R. Saundby.
- 8 Sterilization of Water Supplies for Troops on Active Service. G. S. Woodhead.
- 9 Examination of Recruits of Territorial Force and their Early Training. B. Hughes.
- 10 Insects and War: Lice. A. E. Shipley.
- 11 *Cardiac Fibrillation and Its Relation to Chloroform Anesthesia. J. A. MacWilliam.
- 12 *Blood-Pressure. G. S. Melvin and J. R. Murray.
- 13 Ventricular Fibrillation and Cause of Death Under Chloroform. A. G. Levy.
- 14 Role of Carbohydrate in Nutrition. E. P. Cathcart.
- 15 Recent Experiments Bearing on History of Sugar in Animal Body. J. J. R. MacLeod.
- 16 Influence of Excessive Water Ingestion on Excretion of Creatin and Creatinin. D. Burns and J. B. Orr.
- 17 *Action of Enzymes. E. S. Edie.
- 18 *Congenital Anomaly of Duodenum Encountered During Operation. S. Boyd.

11. Cardiac Fibrillation and Its Relation to Chloroform Anesthesia.—Although MacWilliam's observations were made on animals, he says, that the essential features of fibrillation and the general conditions favoring and determining its occurrence are so strikingly constant in all the warm-blooded animals examined that there is no warrant for assuming an exception in man, but, on the contrary, a strong presumption in favor of a broad similarity in the essential nature of its behavior in man and in mammals and birds. Further, there is the striking resemblance between the general features antecedent to or associated with early collapse in the cat and in many recorded instances in man tendency to excitement and struggling, with disturbance of respiration (holding the breath, exaggerated breathing, etc.). There is also a remarkable resemblance between the recorded phenomena of many cases of early collapse seen in man and those observable in the cat. MacWilliam believes that the conclusion is warranted that ventricular fibrillation is certainly the chief cause of the early chloroform collapse in the cat, and is probably a very important cause of early chloroform collapse in man.

12. Blood-Pressure.—In the application of the oscillation method Melvin and Murray have made use of two instruments: (a) the Erlanger sphygmomanometer, which yields a graphic record, and (b) the Pachon sphygmo-oscillometer, in which the oscillations are examined by visual inspection. As index of systolic pressure they adopted that known as the Recklinghausen-Erlanger index, namely, the pressure corresponding to the point at which, with falling external pressure, there is an appreciable increase in the magnitude of the oscillations. With regard to the estimation of diastolic pressure, they have departed from the index suggested and employed by Erlanger. Prolonged investigation with an experimental schema convinced them that diastolic pressure was to be read at a lower level and from the results brought forward in that experimental study they decided to adopt as the index of diastolic pressure the pressure corresponding with the point on the record at which, with diminishing external pressure, the oscillations showed an appreciable diminution in magnitude. The method of study consisted in the concurrent application of these two methods in a large number of cases, and in the correlation of the results obtained from each.

Roughly, two classes of individuals were examined: first, a set of healthy young adults of average age 20.9; and secondly, a series of old people and of patients manifesting pathologic conditions of circulation. In the "normal" series the authors examined 59 cases, and in all were able to make some determination of diastolic index from the tracing obtained by the Erlanger apparatus. In 19 cases, that is, 31 per cent., however, there was a discrepancy amounting to 10 or more millimeters between the oscillation and the auditory readings. Yet the average diastolic pressure of these 59 cases differed by the two methods by only 2.3 mm. Were the Erlanger index of diastolic pressure to be taken, that is, the reading corresponding with the last stage at which the oscillations are maximal, then the averages differed by 12.6 mm., with the oscillation reading higher than the auditory. In such cases as there occurred a marked difference between the oscillation and the auditory readings they accepted the latter, and for these reasons: At the systolic level similar differences frequently obtained, but at this point the pressure estimated by the tactile method confirmed the auditory reading. The actual pressures which they regard as the normal pressures may then be given as follows: Systolic pressure normally amounts to 111.8, diastolic to 65.7 and pulse pressure to 46 mm. This estimate of diastolic pressure is decidedly lower than the values commonly given, and the estimate of pulse pressure correspondingly higher. The average pulse rate was 80.1 per minute, but they failed to establish any definite relationship between the variations in the pulse rate and diastolic-pressure level.

In the second series of cases there is frequently great difficulty in making a reading of diastolic pressure from the tracing, frequent and serious discordance between readings thus made and the auditory reading. Here, as before, they accept the auditory indications. As the cases examined in this series yield a collection of pressure values in many varied conditions, there is little value in assessing averages. The authors compared the ranges of variation of the different pressures with the corresponding ranges in the "normal" series. Thus, in the latter, diastolic pressures from 82 to 50 were obtained, while in the "pathologic" series, value from 150 to 50 were got. Similarly, the range of variation of pulse pressure was, respectively, in the normal and the pathologic series, 73 to 22 and 163 to 26. There is thus a much greater range of variation in the pathologic series. The authors advance its simplicity, accuracy and applicability as reasons for the adoption of the auditory method as the most satisfactory method of blood-pressure estimation.

17. Action of Enzymes.—A consideration of the general similarity of the action of pepsin and trypsin or protein led Edie to the idea that both enzymes might unite with protein by combining with the same side-chains, but that the specific digestive side-chains differ by being active in acid and alkaline solution, respectively. If this were so, we might expect that pepsin, however, would be able to unite with protein in an alkaline solution, and trypsin would similarly unite with protein in acid solution, neither enzyme being in such cases able to exert any digestive action on the protein. In the former case the pepsin would act similarly to the zymoid of trypsin, excess of pepsin inhibiting the action of trypsin on protein. Excess of trypsin, on the other hand, might be expected to inhibit the digestion of protein by pepsin in acid solution. Experiments have shown that such is the case. If pepsin is mixed with excess of trypsin, its action on protein in acid solution is inhibited, the amount of inhibition being roughly proportional to the amount of trypsin present. For these experiments boiled fibrin was principally used as the substrate.

In a number of cases Edie found that boiled trypsin inhibits the action of fresh trypsin on fibrin, but not on caseinogen. This would seem to show that trypsin unites with fibrin by means of side-chains which are more thermostable than those with which this enzyme unites with caseinogen. It was found also that excess of pepsin acting in an alkaline solution inhibits the action of trypsin on proteins, the inhibition again being proportional to the amount of pepsin present. Both enzymes acting in appropriate solution begin to digest fibrin

practically immediately, there being no preliminary interval during which any dissolved protein is first broken down into simpler products. While boiled solutions of pepsin varied considerably in their behavior, Edie found in some cases that practically all power to inhibit the action of trypsin was destroyed when the pepsin was boiled for half an hour, but different specimens of the enzyme show great variations in their power to resist destruction by heat. It is seen from these observations that the usual text-book statement that enzymes are destroyed in solution at a temperature of 70 to 80 C. must be modified. If trypsin solutions can be boiled in presence of acid without being destroyed, and in some cases without any appreciable loss of activity, there seems no inherent reason why other enzymes under suitable conditions should not resist considerably higher temperatures than they are generally supposed to withstand.

18. Absence of Part of Duodenum.—There was in Boyd's case a complete absence of the third and fourth parts of the duodenum and of the duodenojejunal flexure, and an abnormal position of the proximal part of the jejunum. The duodenum passed to the right and emerged as a coil of jejunum from under cover of the hepatic flexure, thence passing vertically downward through the right loin lateral to the ascending colon to the right iliac fossa, in which case it lay on the lateral side of the cecum. It then passed over the pelvic brim into the pelvis, beyond which point it was not traced.

Lancet, London

September 19, 11, No. 4751, pp. 731-782

- 19 Dysentery. F. M. Sandwith.
- 20 Sterilization of Water Supplies for Troops on Active Service. G. S. Woodhead.
- 21 Juxta-Epiphyseal Strain of Lower End of Humerus and Its Detection by Diagnostic Line. E. W. H. Shenton.
- 22 *Cultivation of Tubercle Bacillus. A. H. Miller.
- 23 Ankylostomiasis in Fiji. P. Harper.
- 24 Earlier Indications of Gas Formation by Coliform Organisms. I. W. Hall and F. Nicholls.
- 25 Paratyphoid Inoculations. W. Broughton-Alcock.
- 26 Open-Air Hospitals in War Time. R. Saundby.

22. Cultivation of Tubercle Bacillus.—While working on the cultivation of the tubercle bacillus with the aid of waxy substances Miller found that the tubercle bacillus on glycerin-egg (Dorset's medium), to which has been added a little sperm oil, a liquid wax, loses its power in part to stain with carbolfuchsin. When stained with carbolfuchsin and simply washed, without being further decolorized, a peculiar appearance is presented. In shape it becomes plumper, much longer, and its ends terminate somewhat finely; this is best seen when stained by Gram's method. The protoplasm refuses to stain with carbolfuchsin in certain parts. In many of the bacilli the staining to non-staining parts assumes some regularity, first a staining portion either in the form of a band, or "granule," then a non-staining band or zone, and so on through the length of the bacillus, so that the bacillus looks extremely "beaded." These "granules" are large, round, refractile bodies, distending the body of the bacillus; they are extremely acid-alcohol-fast, and usually are the last to go on decolorizing with acid-alcohol. The bacillus can be, within quite a short time of decolorization, some few seconds, rendered colorless except for these refractile "granules." There does not appear to be any method in which the bands or "granules" are situated in the length of the bacillus.

Grèce Médicale, Athens

August 15, XVI, Nos. 15-16, pp. 29-32

- 27 Congenital Myotonia; Author's Third Case. (Cas de maladie de Thomsen.) B. Conos. Concluded in No. 17.

Beiträge zur Geburtshilfe und Gynaekologie, Leipsic

XIX, No. 3, pp. 315-478. Last indexed May 16, p. 1587

- 28 *Tubercles in Carcinoma of Uterine Cervix. (Tuberkelknötchen in einem Portiokarzinom.) E. Schmidt.
- 29 *Febrile Abortion and Its Treatment. F. Walther.
- 30 The Three Segments of the Uterus. (Zur Frage des Isthmus uteri.) H. Sternberg.
- 31 *Injury of Eye during Delivery, Especially Forceps Delivery. (Augenverletzungen bei der Geburt und bes. bei der Zangenoperation, und ihre gerichtlich-med. Bedeutung.) J. Goldwasser:

- 32 Serodiagnosis of Cancer by Abderhalden's Method. S. Blackstein.
- 33 Influence of Menstruation on the Blood-Picture in the Healthy. G. Gumprich.
- 34 The Antitrypsin Findings and Leuko cytosis at Laparotomies. D. Gorbakowsky.

28. Giant Cells in a Cancer.—The *Beiträge* had just concluded its nineteenth volume when death took its founder and editor, A. Hegar. This article by Schmidt reports the discovery of tubercles scattered over the expanse of a cancerous growth in the uterine cervix. Necropsy revealed also multiple tuberculous foci in one kidney although the woman of 55 had been apparently healthy until the cancer developed. There were traces of horny substance near the giant cells in the cancer, and Schmidt thinks that the "tubercles" were the response to irritation from these foreign particles of horny substance, and were not the work of tubercle bacilli. None was found outside of the tuberculous kidney.

29. Febrile Abortion.—Walther reviews the experiences with 834 cases of abortion in Fehling's service at Strassburg; 134 were examined bacteriologically. Hemolytic streptococci were found in 50 and non-hemolytic in 24; hemolytic staphylococci were found in 24; in only 12 were the bacteriologic findings negative. In 212 cases there was fever but in exactly 50 per cent. of these the fever subsided at once after evacuating the uterus, including 49 cases in which the evacuation was done with the curet. In the 23 febrile cases with hemolytic streptococci, cureting was done in 54.4 per cent. In 3 cases the course was normal notwithstanding the presence of the hemolytic streptococci. In 3 cases with the latter, disaster followed expectant treatment. In another case colon bacilli were associated with the hemolytic streptococci and one patient, already a prey to sepsis when first seen, died. He tabulates further 26 cases in which the germs evidently had passed beyond the confines of the uterus as the fever kept up after the uterus had been evacuated; 84.6 per cent. in this group died, showing the gravity of these secondary streptococcus affections. In 12 other cases the fever was traced to peritonitis or pneumonia or an abscess.

The practical conclusion of these and other data cited is that the uterus should be emptied at once and as cautiously as possible and that we should not be deterred from this or from curetting by the discovery of hemolytic streptococci. After thorough examination, if the uterine process is found to extend beyond the uterus, treatment should be addressed to the secondary process first. If the infection is still restricted to the uterus, this should be evacuated, and he advocates the curet rather than the fingers. It does not scrape out so much as the fingers, but asepsis is much easier to realize with an instrument than with the hand. Even rubber gloves do not insure positively against mishaps, and the cervix has to be opened much wider for the fingers than for the curet. Still another advantage of the latter, he says, is that detritus of muscle tissue is much easier to remove with the curet than with the fingers; the finger does not even feel it, as a rule. The only exception is when large scraps of membrane and clotted blood cling fast to the uterus wall—here the finger does better than the curet. The latter glides over them, taking them to be part of the uterus wall. He adds that an expert is no more liable to perforate the uterus with a curet than with the finger. When hemolytic streptococci are found he advises evacuating the uterus with the fingers rather than with the curet although his experience has been so favorable with the curet that its use is justified in many cases. If the cervix is closed and rigid, and laminaria do not answer the purpose, he dilates with the metal dilator (Bossi). The fever drops and the patient usually promptly recovers. A vaginal douche with a little hydrogen dioxid or other disinfectant then washes out the last scraps of the fetal membranes. If the bleeding keeps up, he tampons with gauze dipped in 10 per cent. camphorated oil. The whole procedure is concluded with a dose of ergot.

31. Obstetric Injury of Eye During Birth.—Goldwasser declares that the physician should not be held to blame if the eye gets injured during the birth process as this may occur from deformity somewhere in the pelvis even with spontaneous delivery. If the injury should be done with

forceps, this may be unavoidable; it has happened to more than one skillful and long experienced obstetrician. He has compiled 132 cases of injury of an eye during birth and in only 3 of the cases had version and extraction been done. In 43 cases the presentation was not mentioned; in 86 the head came first. In 80 of the total 132 cases the injury was done with forceps, but in 25 cases delivery had been spontaneous but difficult on account of deformed pelvis. In 2 of the spontaneous cases the injury was exceptionally severe. Even when one is convinced that the forceps or awkward management of the delivery are responsible for the injury, yet it is hard to prove it. Goldwasser asserts there is actually no means certainly to avoid trauma of the eye during forceps delivery. It is wiser to refrain from applying the forceps to the fronto-occipital diameter. If it has to be done, the forceps should be guided by the left hand.

Berliner klinische Wochenschrift

September 7, LI, No. 36, pp. 1605-1620

- 35 *Differential Atmospheric Pressure Procedures. (Die jetzige Gestaltung des Druckdifferenzverfahrens.) L. Dreyer.
35 *Some Hitherto Unappreciated Actions of the Roentgen Rays. (Einige unbekannte Wirkungen der Röntgenstrahlen und ihre therapeutische Verwertung.) H. Eckstein.
37 Roentgenography of Liver and Spleen. (Klinische Anwendung der Röntgenphotographie der Leber und Milz.) E. Rautenberg.
38 Lupus of Syphilitic Origin. O. Heinemann.
39 Simple and Convenient Receptacle to Receive and Send Stool for Examination. (Faecotenor.) W. Kiel.

35. Differential Atmospheric Pressure as Aid to Operations.—Dreyer relates the history of the application of overpressure and underpressure in operations on the chest, saying that the positive-pressure procedure seems to have won most favor although all recognize that conditions with negative pressure are more physiologic. The use of oxygen instead of pure air has materially facilitated the method, as with oxygen the positive pressure need be only very little above normal. Intratracheal insufflation is a close competitor of the overpressure procedure, but he has found it difficult to get the right-sized catheter; too large, it hinders the outflow of air, and too small, it does not permit adequate inflow. He has also found difficulty in introducing the catheters without doing harm.

36. Immediate Relief from Pain under Roentgen Rays.—Eckstein declares that too little attention has been paid as yet to the analgesic action of the Roentgen rays. He discovered it accidentally in his own person when he sprained his hip-joint and suffered from constant pain. Finally he had it examined with the Roentgen rays to see if there was not some fracture in the joint, and to his surprise he had no more pain in the joint for a week and then it was mild and subsided permanently under a second exposure. The power of the rays to arrest pain immediately has been utilized in treatment of tumors, leukemia and pelvic disease, and it will probably prove equally effectual in neuralgia, gout, deforming arthritis, furunculosis, malarial spleen and tuberculosis. The dermatologists have long proclaimed its value in arresting pruritus with eczema, lichen ruber and fungoid mycosis. Eckstein relates several striking instances from his own practice; one patient after severe contusion of the spine came on crutches into the Roentgen room and left at once after the exposure, free from all pain, carrying the crutches in one hand.

Another promising field is to ward off after-pain in operative cases. The patient is wheeled into the Roentgen room and an exposure made as soon as the operation is finished, before he rouses, and not until then is he taken back to bed. Exposure of the chest and neck arrested reflex spasm preventing introduction of the larynx mirror in one case. Eckstein says that the above by no means exhausts all the indications for the analgesic action of the Roentgen rays. He has never witnessed any harm from the procedure. With inflammatory processes the results sustain his assertions of twenty years ago that checking the transmission of pain impulses seems to have an inhibiting effect on inflammation. He found that wounds dusted with an anesthetic powder healed much more rapidly than the controls.

Deutsche medizinische Wochenschrift, Berlin

September 3, XL, No. 36, pp. 1705-1724

- 40 *Dietetic Treatment of Hyperacidity, Hypersecretion and Peptic Ulcer. H. Strauss.
41 *Progress in General Anesthesia by Inhalation. D. Kulenkampff.
42 *Indicanemia and Uremia or Azotemia. J. Tschertkoff.
43 Albumin Content of Tuberculous Sputum. (Eiweissgehalt im Sputum Tuberkulöser.) G. Hafemann.
44 "Peanut Milk" in Infant Feeding. (Erdnussmilch statt Mandelmilch.) R. W. Raudnitz.
45 *The Wounded in the Present War. (Aus Verwundetenlazaretten.) V. Czerny.
46 Advantages of Ethyl Chlorid for Minor Operations. (Kleine fieldärztliche Mitteilungen; Chloräthylrausch.) L. Fränkel.

40. Dietetic Treatment of Hyperacidity, Hypersecretion and Peptic Ulcer.—Strauss expatiates on the significance of the frequent coincidence of these conditions and preliminary stages of ulceration in the stomach or duodenum. The irritation from the erosion or ulcer keeps up excessive secretion and the excessive secretion keeps irritating the ulcer. Treatment should aim to break up this vicious circle, and treatment for one should always include treatment of the other. Experience is showing that only the superficial ulcers are amenable to internal treatment. Ulceration that burrows deep into the tissues is more rebellious, as also ulceration in or near the pylorus as this entails disturbance both in motor and secretory functioning. To spare the stomach and yet give sufficient nourishment while at the same time combating hypersecretion and hyperacidity is best accomplished, he is convinced, by feeding fat. He gives it in the form of butter, cream, egg yolk and cream cheese but not bacon fat.

In a specimen case of gastric ulcer, nothing was allowed by the mouth for three days; nourishment to a total of 600 calories was given by the rectum alone each day. The main reliance in feeding was on cream, egg yolk, butter, soft custards, white cheese, and vegetables and chicken or pigeon meat. The vegetables and meat are forced through a sieve and not given till the twenty-second day. The stomach gets thus nothing for three days; 231 gm. the fourth to sixth days; 823 gm. the seventh to ninth, representing 1,296 calories, and so on to 2,829 gm. by the end of the fourth week, with 3,976 calories a day. Nothing but fluid foods are permitted until the stools have been free from blood for eight or ten days. Then ten or twelve days are allowed for healing before the patient is permitted to get up. Each case must be individualized as to duration of the periods, and preparation of the food to tempt the appetite. By planning the diet in this way to combat hyperacidity and hypersecretion, we can scarcely ever do harm, while the neglect of this has often wrought serious damage, he is convinced.

41. Recent Progress in Inhalation Anesthesia.—Kulenkampff remarks that the published statistics of the mortality from general anesthesia are generally compiled from the larger institutions and present a more favorable picture than is true of smaller institutions. He cites a recent American compilation from private or small public hospitals which places the mortality of ether anesthesia at 1 to 500. He says that a general anesthesia is an experimental intoxication, and that when mixtures are used the ingredients vaporize under different conditions so that the exact amount of ether actually inhaled cannot be ascertained. With deep and regular breathing, inhalation anesthesia is very different from what happens when the respiration is shallow and irregular. The slightest change in the tint of the lips or aspect of the face is a warning that should be looked for every two or three minutes at least.

He protests most decidedly against Henderson's views, reiterating that everything should be avoided which in any way tends to increase the poisonous carbon dioxide in the body or cause its retention in amounts above normal. Free air, not oxygen, is the main thing. Kulenkampff emphasizes the necessity for the anesthetics being given so that they steal insidiously over the patient, saying that not the narcosis but the impatience of the operator is the danger. When very slight anesthesia is desired, he keeps talking to the patient and insisting on his answering and he gives more or less ether as the answers are rational or show confusion. When this simplest and entirely harmless "conversa-

tion Rausch" is not practical, he uses ethyl chlorid. The outward relaxation of the patient is less important than inward tranquillity. The main progress in recent years, however, he thinks, is in the use of apparatus; with them the maximal concentration is not left to the arbitrary judgment of the anesthetist.

42. **Indicanemia and Uremia.**—Tschertkoff has been estimating the proportion of urea and indican in the blood-serum in 120 cases, including 51 of Bright's disease. He tabulates the findings in 13 cases of nephritis without azotemia; in 14 of acute nephritis with azotemia; in 13 of chronic nephritis with azotemia and in 24 controls. He never found—independently of the food—retention of urea in the serum nor any indican when the kidneys were functionally capable in sick or well. Indican is found constantly in the serum whenever there is retention of urea in kidney diseases. Indicanemia unfailingly accompanies a urea content of 1.5 per thousand, and this with chronic nephritis is a sign of severe and irreparable changes in the kidneys. This does not have the same grave prognosis in acute nephritis as with the chronic form. Even after the azotemia has been corrected by appropriate measures, the indicanuria may persist as the only sign of insufficiency of the kidneys.

Medizinische Klinik, Berlin

September 6, X, No. 36, pp. 1441-1460

- 47 Care of the Wounded in War. (Organisation des Feldsanitätsdienstes.) A. Köhler.
- 48 Epidemics during War Time. (Seuchengefahr im Biwak und in der Ortsunterkunft.) K. Brandenburg.
- 49 Care of the Wounded in Naval Battles. (Sanitätsdienst auf Kriegsschiffen beim Seegefecht.) Haenlein.
- 50 *The Accessory Cavities of the Nose in Connection with the Pathology of the Eye. (Bedeutung der Nasennebenhöhlenaffektionen in der Pathologie des Auges.) A. Elschmig.
- 51 Syphilitic Axillary Paralysis and Aneurysm; Two Cases. K. Tuczek.
- 52 Examination of the Urine for Sugar. (Welches sind für den praktischen Arzt die brauchbarsten Methoden zur Zuckeruntersuchung des Urins?) B. Glaserfeld.

50. **Importance of Sinusitis in the Pathology of the Eye.**—Elschnig expatiates on the great importance of the part played by the nasal accessory sinuses in the pathology of the eye. This is a discovery of the last decade, he says, and even now its importance is not appreciated until one witnesses the prompt cure of a recurring iridocyclitis, for example, when a suppurating process in an accessory sinus is discovered and cleared out. Neuritis of the optic nerve may develop from propagation of the suppurative process to the brain indirectly through the meninges or directly. In other cases the trouble is from compression of the orbit, eyeball or optic nerve from the enlarged sinus.

The most serious and the most common eye trouble secondary to sinusitis is inflammation of the optic nerve. He has encountered 16 unilateral cases of this kind; in 3 the ophthalmoscopic findings were normal, the neuritis being altogether retrobulbar; in 9 there were slight evidences of inflammation in the papilla and in 4 severe intra-ocular neuritis with choked disk. In 6 of the 14 cases measured, there was slight exophthalmos. In 7 cases the pupil was dilated but the reactions were not impaired. In 10 cases vision had been almost entirely lost on that side; in 3 there was merely central relative scotoma and in 3 absolute scotoma. Only in the severest cases was there restriction of the field of vision, especially for colors.

In all but 4 cases vision returned nearly or entirely to normal after treatment of the suppurative process in the accessory nasal sinus. In these 4 the eye trouble was of from four to fourteen days' standing; in 2 there was advanced intra-ocular neuritis; in 1 slight neuritis, and the findings were normal in the other case.

The sinus trouble ranged from mere catarrh to the severest hypertrophy, polyp growths or suppuration in the different cases, but only in 5 cases was the sinusitis suspected by the patient or physician, and only in one of these had its connection with the eye affection been suggested. The blind spot was not enlarged in any instance. When both eyes were affected the pupils were widely but irregularly dilated and the reactions were not always quite normal.

The diagnosis is peculiarly difficult when there is some nervous affection in addition to the sinusitis. Retrobulbar neuritis with central scotoma is by no means uncommon in multiple sclerosis. Sinusitis was found also in 3 cases of brain tumor and 1 of multiple sclerosis but the eye trouble persisted unmodified after the cure of the sinusitis under treatment. Syphilis was demonstrated in 5 of the total 35 cases of nasal sinusitis in ophthalmologic cases; orthostatic albuminuria, extreme indicanuria or cardiac defect was evident in one case each. In 5 cases the amblyopia had been attributed to tobacco poisoning until the sinusitis was discovered.

During the seven-year period in question, Elschmig has encountered 208 cases of disease of the optic nerve; the 35 cases with sinusitis thus form 15 per cent. of the total material. A cancer in the nose led to an abscess in the optic nerve in a case (soon to be published by Gradle of Chicago).

The prompt subsidence of the neuritis when the sinusitis is treated in time shows that with irritation of the optic nerve there is generally a curable stage if the toxic and mechanical influences can be removed. Sometimes vision improved immediately as the contents of the sinus were aspirated out.

Münchener medizinische Wochenschrift, Berlin

August 25, LI, No. 34, pp. 1833-1864

- 53 *Diagnosis of Form of Pulmonary Tuberculosis. E. Romberg.
 - 54 The Granular Form of the Tuberculosis Virus. S. Weiner.
 - 55 Mechanism of Development of Presbyopia and of Cataract. (Entstehung der Weitsichtigkeit und des Stars.) F. Schanz.
 - 56 *Insomnia and Restless Sleep. (Schlafstörungen.) C. Happich.
 - 57 *Salvarsan May Prove Dangerous with Latent Insufficiency on the Part of the Kidneys. (Zur Pathogenese eines Salvarsantodesfalles.) W. Wechselmann.
 - 58 Hygiene in War. (Kriegshygiene.) A. Dieudonné.
 - 59 The French Infantry Bullet. W. Straub.
 - 60 *Acute Nephritis from Chilling. (Fall von akuter Erkältungs-nephritis.) Gehrman.
 - 61 Dressings for Gunshot Fractures. (Wundverband bei Schussfrakturen.) Schönwerth.
- September 1, No. 35, pp. 1865-1896
- 62 *Roentgenograms of the Bladder. (Ueber Zystographie.) O. Zuckerlandl.
 - 63 Action on Blood of Roentgenized Serum. (Experimentelle Untersuchungen über die Wirkung von röntgenisiertem Serum (X-Serum) auf das Blut.) J. Glaubermann.
 - 64 *Industrial Poisoning in Manufacture of Fertilizer. (Ueber neuartige gewerbliche Erkrankungen in Kalkstickstoffbetrieben.) F. Koelsch.
 - 65 *Fatal Poisoning from Chineonal. (Vergiftungstod durch "Chineonal.") V. Erdt.
 - 66 Electric Treatment of Obesity. (Ueber therapeutische Erfolge mit dem Degressator nach Dr. Schnée.) A. Schnée.
 - 67 The Phenolsulphonephthalein Test of Kidney Functioning. (Unsere Erfahrungen mit der Phenolsulphophthalein-Methode als Prüfungsmittel der Nierenfunktion.) O. Hess. Commenced in No. 34.
 - 68 Surgical Notes from the Front. (Chirurgische Beobachtungen vom Kriegsschauplatz.) P. Kraske.
 - 69 Distribution of Pseudo-Dysentery Bacilli. (Verbreitung der Y-Dysenteriebazillen.) O. Mayer.
 - 70 Vaccine Therapy of Gonorrhea. (Zur Gonorrhöbehandlung mit Gonokokkenvakzin Menzer.) F. Becker.
 - 71 Care of the Wounded in Naval Battles. (Seekriegschirurgie und kriegschirurgische Dogmen.) M. zur Verth. Commenced in No. 34.

53. **Diagnosis of Form of Pulmonary Tuberculosis.**—During the last twenty years Romberg has paid special heed to the nature of the anatomic process at necropsy, comparing it with the physical findings recorded during life, and has found remarkable agreement between them, especially when shriveling processes are accompanied by progressive changes. The number of bacilli in the sputum does not seem to be a reliable criterion for the prognosis but the Roentgen findings often differentiate between proliferating and exudation processes and show up a cavity more reliably than percussion auscultation. In his service at Tübingen in about one-seventh of all the cases of a tuberculous process in the left lung alone it had started in the hilus. The area of resonance in the third and second interspaces, near the sternum, grows less and slight changes in the respiration murmur are evident; a pathognomonic cavity develops here by preference. The process spreads from this point. Similar changes develop only rarely on the right side. Sometimes the first physical changes are between the shoulder-blades toward the right or at the right margin of the heart or, rather later, in the

right axilla. It is more difficult to obtain characteristic findings on the right side, and they are not evident so early. Roentgenoscopy alone will clear up the diagnosis in these puzzling cases.

Secondary catarrh and inflammation play an important part in the clinical picture. If physicians realized the frequency of these secondary complications and promptly favorable course as a rule—modifying materially the clinical picture—they would not jump at erroneous conclusions so often and ascribe the improvement observed to the medicine the patient happens to have been taking at the time. The literature on tuberculosis and on remedies for tuberculosis is eloquent testimony to the wide-spread ignorance in the profession of the prevalence of these complicating affections.

56. *Sleeplessness.*—Happich cites data to reaffirm anew the importance of directing our measures to the vascular system in treatment of disturbances in sleep. During slumber the tonicity of the vessels of the brain is reduced and the height of the pillows may be a factor in inviting or driving away sleep. Some persons do not sleep soundly because their pillow is too low, while the anemic require a high pillow or the relaxed vessels will not send blood enough into the brain. All measures which actively dilate the peripheral vessels tend to interfere with sleep; besides a hot bath and exhilarating doses of alcoholic drinks, he mentions a certain amount of physical exercise as tending to drive off sleep. He also lays great stress on the breaking up of habits of going to sleep under certain conditions. When sickness in the family, travel or worry has broken up the regular automatism of going to sleep, it has to be learned over again, and here sleep-producing drugs render valuable service, starting the automatic mechanism to work anew. But he does not approve of knocking the patient down, as it were, with a dose of the narcotic at bedtime. He gives a small dose of a sedative after the noon meal, again between 5 and 6, and again at 9. Thus taken, the sedative merely wards off the natural excitement of the close of day; the culmination of the various happenings of the day causes in all of us, he remarks, a kind of excitement or fever in comparison to the morning. By excluding this, sleep comes naturally. The importance of regulating the circulatory system as the main point in treatment of sleeplessness is illustrated by the case of a young wife under the emotion of the sudden death of her husband, who was given morphin and other narcotics but they only increased her excitement until it became almost delirium. Happich then had hydrotherapy applied, packing her entire body, and she quieted at once as the circulation became modified. The narcotics were then able to exert their effect and in half an hour she was asleep.

57. *Discussion of Fatalities after Salvarsan.*—Wechselmann reiterates that a certain proportion of these fatalities are due to the inability of the kidneys to eliminate the poison. The trouble is, in fact, a retention toxicosis with uremic symptoms. For this reason he never gives an intravenous injection of salvarsan to a pregnant woman without first testing the functional capacity of her kidneys with Schlayer's milk sugar technic at least. This reveals that many pregnant women whose kidneys are apparently functioning normally, in reality are suffering from kidney derangement to such a degree that superposing any extra task would bring on an inevitable break-down. The renal vessels often showed impairment while the tubuli were evidently still normally capable. In one case of pregnancy eclampsia, the tests revealed the typical findings of vascular hyposthenuria. In others they showed that the oliguria at the end of pregnancy does not necessarily imply anything wrong in the kidneys. The pregnant organism is already under such strain that it seems wiser to go below the dosage of salvarsan usual under other conditions, and to commence with small tentative doses, starting with 0.15 gm., subcutaneously, up to 0.45. In the fatal case reported by Frühwald recently, the patient was a girl of 18, six months pregnant. He made an intravenous injection of 0.75 gm. neosalvarsan in 2 c.c. fluid and repeated the dose five days later. The next day the girl developed hemorrhagic encephalitis and died in the evening. The kidneys may have suffered from previous infections, mercury

or alcohol, so that they are unequal to the task of eliminating salvarsan in the usual dosage. This insufficiency should be detected in time and the dosage planned to conform to it.

60. *Acute Nephritis Following Chilling.*—Gehrmann relates that a man of 28 was revived after having been nearly drowned. He had been under water for five to seven minutes and died the next day of cardiac insufficiency. Necropsy revealed entirely acute hemorrhagic nephritis in a pronounced form. The rapid development of the nephritis after the chilling and the discovery of it so soon at necropsy, makes the case almost a clinical experiment.

62. *Cystography.*—Zuckerkindl gives a number of Roentgen pictures taken with technic similar to that for pyelography, showing different pathologic conditions in the bladder, and compares them with the histories in four cases of infiltrating cancer of the bladder, twelve of a pedunculated tumor in the bladder with no infiltration at the base, and a few cases of hypertrophied prostate. Very instructive findings can thus be obtained by filling the bladder with a weak collargol solution and taking the roentgenogram, then emptying the bladder and taking another, the conditions otherwise the same. Enough of the shadow-casting fluid will cling to a tumor or stone in the bladder to cast a shadow in the second roentgenogram. With a pedunculated tumor, filling the bladder with air after evacuation of the fluid may lift up the tumor. When cystoscopy was impracticable for any reason or gave dubious findings, this cystography proved extremely instructive. The fluid ran up into the ureters sometimes but this never was misleading.

64. *Industrial Poisoning in Manufacture of Fertilizer.*—The artificial fertilizer made out of lime subjected to intense heat contains about 57 per cent. cyanamid, and to this Koelsch ascribes the peculiar intoxication presented by the workers when they take alcohol. At other times the workers feel in usual health, but at the first or second swallow of the beer, wine or whiskey, the face and neck and shoulders turn deep red as if they had been burned, the discoloration on the trunk and arms resembling a scarlatinal eruption. The conjunctiva and mucosa in the mouth and throat are also extremely red. The extremities are cold; the respiration and heart-beat are accelerated. The attack lasts an hour or two, and if the man vomits or the bowels move, improvement follows at once. The more dust in the air of the workroom, the severer the attack if liquor is taken afterward. Since the workmen noticed the connection between liquor and the attacks they mostly refrain from alcohol in any form and the attacks do not return. The company supplies gallons of coffee free to the men and the place is better ventilated now.

65. *Fatality from Chineonal.*—Some chineonal tablets fell into the hands of a child of nearly 3 and it swallowed nine tablets during the day. At 7 the child seemed very sleepy and fell off its seat and vomited. The physician found arms and legs as if paralyzed, reflexes abolished, and stupor and cyanosis followed. The child died at 10 without having responded to lavage of the stomach and stimulants and artificial respiration. Necropsy failed to reveal any chemicals except that from 200 gm. of brain substance a few crystals were obtained which were evidently veronal, chineonal being a combination of veronal and quinin. The child had taken in the tablets 0.648 gm. veronal in six or eight hours. The lack of hyperemia in the brain showed that the fatality could not be ascribed to the quinin, although this probably aided in weakening the resisting powers. The antidotes for veronal poisoning are cited as ether and caffein, and for quinin poisoning, coffee, tea, injection of ether and atropin. Erdt suggests that possibly atropin might be tried for chineonal poisoning. In the case reported the father insisted that the physician was alone to blame for the child's death, declaring that he had suffocated it during the rinsing out of the stomach.

Zentralblatt für Chirurgie, Leipzig

September 5, XLI, No. 36, pp. 1433-1464

72 *Resection of Lobe of Lung with Hermetic Closure of Stump of Bronchus. (Extirpation von Lungen und Lungenlappen mit Versorgung des Bronchialstumpfes durch frei transplantierte Fascia lata.) K. H. Giertz.

72. **Resection of Lung.**—Giertz says that it is a simple and comparatively harmless matter to remove the entire lung of a rabbit or other small animal, ligating the hilus stump. It is not necessary to ligate separately the stump of the bronchus. None of the rabbits in his experiments died. He found that rhythmic intermittent positive pressure kept up the respiration perfectly. The operation is more difficult the larger the animal, but he succeeded in eight of ten large dogs in a still more complicated operation, closing the stump of the bronchus air-tight, reenforcing the suture with a small flap of fascia lata, sutured to cap the bronchus stump and then buried in living tissue. The day after the operation even the larger dogs were up and at play. There was no primary infection in any case.

Gazzetta degli Ospedali e delle Cliniche, Milan

August 30, XXXV, No. 104, pp. 1089-1104

73 *Operative Treatment of Aneurysms. R. Mosti.

September 6, No. 106, pp. 1121-1136

74 Refutation of the Arguments of the Antivaccinationists. (La vaccinazione antivairosa.) C. S. Materazzi.

73. **Operative Treatment of Aneurysms.**—Mosti reviews the long history of operative treatment of aneurysms and emphasizes the advantages of excising the sac, illustrating his remarks with a typical case. The patient was a man of 37 and the aneurysm in the lower third of the femoral artery had developed rapidly and attained a large size in two months causing intense pain and other disturbances. The aneurysm was opened, the clots were cleared out and then the sac was released from the numerous adhesions binding it down and was removed. A small piece of the wall had to be left adherent to the femoral vein. Except for a slight transient rise in temperature, recovery proceeded smoothly for nearly a week when the skin of two toes became gangrenous, but after removal of the gangrenous skin conditions returned to clinically normal and by the end of two months the man was completely cured.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

July 4, II, No. 1, pp. 1-104

75 *Treatment of Chronic Intestinal Catarrh in Children. J. C. Schippers.

76 Paraffin Prothesis for the Eyeball. (Insluiting van paraffinekogels in sklera-buiden en kapsel van Tenon.) R. Speleers.

77 Workmen's Compensation Legislation. J. A. Korteweg.

75. **Intestinal Catarrh in Children.**—Schippers reports nine cases of long chronic intestinal catarrh in children from 1½ to 5 years old in which he succeeded in curing them by restriction to concentrated albumin milk, 1 liter a day, for ten to twelve days. Albumin milk has proved effectual in infant feeding, and Schippers explains how the same factors at work in infancy may prove effectual in the disturbances in older children resulting from intolerance for carbohydrates. In certain cases the intolerance for carbohydrates leads to chronic catarrhal irritation in the bowel. The stools are spongy, with gas bubbles, have a sharp acid smell, give the reaction for acid with litmus paper, and Gram-positive bacteria are found on smears. It is in cases of this nature that surprising benefit follows when the diet is modified to contain large proportions of albumin with very little carbohydrates. L. F. Meyer has published a standard diet for such cases, containing albumin, cheese, meat, etc., but very little carbohydrate. Schippers uses a bean soup, which has a high albumin content, instead of the expensive commercial food recommended in Meyer's ration.

But better than all this, for reasons which he describes in detail, is a systematic ten to fourteen days' course of albumin-milk feeding. He gave the children one liter of undiluted, concentrated albumin milk, with nothing else but rice water sweetened with saccharin. In one, two or three days the child appeared normal, and for the first time in months, possibly, the stools were no longer fetid or mucous. This course of albumin milk was followed by a diet according to Meyer's outline. The albumin-milk treatment gives the intestine a chance to rest, the balance between the flora of the small and large intestine becomes restored and the child becomes able to tolerate carbohydrates better. The formula of the

albumin milk he used calls for: 3.6 per cent. albumin; 1.5 to 1.6 per cent. milk sugar; 3 per cent. maltose; 2.8 per cent. fat and 0.62 per cent. mineral elements. It represents 572 calories.

Hospitalstidende, Copenhagen

September 2, LVII, No. 35, pp. 1081-1112

78 *Animal-Parasites Cancer. J. Fibiger. Commenced in No. 34.

September 9, No. 36, pp. 1113-1136

79 Treatment of Recent Subcutaneous Fracture of the Patella; Fifteen Cases. P. Zachariae.

78. **Animal-Parasite Cancers.**—In this second and last instalment of his report Fibiger gives the microscopic findings in several of the twelve rats which he fed on cockroaches infected with the *Spiroptera*, as described in these columns October 3, p. 1244. The results of this recent research confirm those of his former work in this line, demonstrating the development of malignant disease under these conditions. In one rat there was pluricentric development of the cancer; this rat was killed the sixty-fifth day. The malignant disease developed under the action of the *Spiroptera* even in some quite young rats. The cancer developed in three or four months in the rats and in one case there was metastasis in the lungs when the animal was killed the hundred and fourth day. His total material now includes nineteen cancers developing in the stomach after feeding the rats with roaches infected with *Spiroptera*. This he regards as meaning that under certain conditions one-half or four-fifths of the animals infected develop cancer, and that no individual predisposition is necessary for this.

Ugeskrift for Læger, Copenhagen

September 3, LXXVI, No. 36, pp. 1541-1578

80 *Roentgen Treatment of Superficial Cancer. (Om röntgenbehandling af hudkraft.) J. Nordentoft.

81 *Experiences with Roentgen and Radium Treatment of Cancer. S. Nordentoft.

80-81. **Roentgen Treatment of Cancer.**—J. Nordentoft tabulates the minute details of the twenty-one cases of external cancer in which the patients are apparently cured as the cancer has vanished and there has been no sign of recurrence during the interval since, which ranges from a few months to three years. The tumors were all on the face except one at the mouth of the urethra.

S. Nordentoft was the first physician in Denmark to report a case of deeper cancer with multiple metastases in which a clinical cure was realized with Roentgen exposures. The young woman had had one ovary removed fifteen months before for a supposed benign tumor; the cancer was in the remaining ovary which was then removed. Three weeks afterward the Roentgen treatment was commenced when already there were several metastatic lumps to be felt; one in the pouch of Douglas was a knobby tumor as large as a fist. The Roentgen treatment was applied systematically and the metastatic tumors subsided; others developed at other points again and again and each time they retrogressed under Roentgen exposures. Several times he had expected to present her at a meeting of his medical society but each time new metastases developed in the interval between the sending in of the notice and the meeting. At present no tumors can be palpated and there is nothing apparently abnormal in the pelvis except that the serosa is rough and irregular in the pouch of Douglas. He has not given up hopes of a final cure as the metastases develop now with longer intervals and seem to be more susceptible to the Roentgen rays. There is also a kind of auto-immunization to be counted on, like a vaccine therapy, from absorption of the cancerous tissue. He reports further a number of other cases of cancer given Roentgen treatment with encouraging results. He regards it as superior to operative measures even for superficial cancers, as it does not sacrifice any tissue, even the stroma of the cancer is saved, and he believes that there is less danger of recurrence. Last but not least, patients come for treatment at an earlier stage when they know they do not have to submit to a mutilating operation. His experience with radium, on the contrary, has been unfavorable. Treatment of cancer, he reiterates, requires individualization and skilful application of adjuvants as needed.

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THE STANDARDIZATION OF THE SURGEON *

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In discussing that phase of this symposium which has been assigned to me, namely, the standardization of the surgeon, there are certain fundamental facts that must be clearly understood. In the first place, it must be determined what one means when one uses the term "surgeon." In the second place, what is to be the basis of the standardization? Elsewhere I have endeavored to define the surgeon as a member of "a profession ennobled by men actuated solely by their desire to devote their time and their talents to the relief of suffering humanity, willing, yes, glad, at any time, if need be, to lay down their own lives for those of their fellow men; whose membership should embrace only men of singleness of purpose, unselfish, high-minded, zealous in their efforts to wrest from Nature the keys to her many mysteries; men who unconsciously, perhaps, in character and conduct, reflect in varying degree the life and spirit of the Great Physician; a profession free from taint of commercialism or graft, in which there shall be no room for the base, the unscrupulous, the ignorant or the unskilled; in which the test for membership has to do only with character and attainment." Are our ideals too high? Are we striving after the unattainable? Is it worth while to make the effort?

It is quite likely that the average man, if called on to define a surgeon, would say something like this: "a man who does surgery," meaning, of course, one who devotes his time and attention exclusively to this branch of medicine. But will that definition of the term be generally accepted by the members of the profession? As a matter of fact, is it not true that a great many doctors without adequate training consider themselves surgeons, qualified to practice surgery, and actually do perform surgical operations in all cases that offer, whether major or minor? Is it not true also, that a great many patients are being operated on who ought not to be operated on? To these questions candor and the facts compel us reluctantly to answer in the affirmative. It is our duty then to try to establish at once certain standards to which a man must conform before he can rightly enjoy the distinction that belongs to the title of Surgeon.

Let us consider the following:

1. The necessary education and training preliminary to the medical course. This is a most important

and far-reaching factor, the full consideration of which would of itself take a large portion of the time at our disposal. It cannot, therefore, be more than referred to in passing. What form should it take, the usual collegiate course leading up to the A.B. or B.S. degrees as at present proscribed in our colleges and universities, or a specially arranged course in which the relative proportions of the sciences, languages and the humanities would be better adjusted than at present? How large a part should training in the mechanical arts play in this new scheme? Is it necessary or advisable that the applicant for admission to the medical school should have a college degree at all, as a prerequisite to beginning the study of medicine? These and many other questions press for an answer, but their consideration at this time would lead us too far afield.

2. Medical instruction in the medical school proper, the length of time required and the particular function and form which this should assume.

3. Hospital service and apprenticeship with an older and experienced surgeon, the length of time advisable, and the character of the work to be performed.

4. The special tests to be required before the individual is allowed to practice surgery. What should be the character of this examination? Should it be theoretical or practical or both, and how thorough? Under whose authority should it be held? Who should constitute the examining board, by whom the license to practice is to be granted? How comprehensive should this license be? Should it be limited as to time of graduation and be supplemented by later and more rigid tests, or should it be a liberal and final license to practice without further review?

5. Continued supervision over the work of the individual surgeon, with power to revoke his license in case of undoubted evidence of moral turpitude or professional unfitness to continue the practice of so serious a profession as that of surgery.

All these and more are burning questions at the present time, and one cannot arrive at any sort of satisfactory or final conclusion without a thorough consideration and study of the underlying educational, moral and ethical principles. For looked at from every point of view, one cannot get away from the fact that there is a moral side to this whole question as well as an ethical and professional one. I shall attempt in my discussion of the standardization of the surgeon not to lose sight of the relative importance of these various factors. The discussion of medical education proper, and of the character of the hospital and hospital work required of the prospective surgeon will be left to those to whom these topics have been assigned.

* Read before the joint meeting of the Section on Surgery, General and Abdominal, and the Section on Hospitals at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, June, 1914.

It will be apparent at once that it is an extremely difficult matter to state any definite standard for the surgeon. What shall be the basis of this standard? Who shall be the judge? What will be the machinery by which these standards shall in the first place be set up, and in the second place enforced? Should it be by the authority of the profession itself backed up by professional public opinion, or shall it be by the authority of the state, or by a combination of the two? It goes without saying that the standards must of necessity be high, for there is no profession that demands such exacting requirements of its members as that of surgery. It can be more truly said of the surgeon than of any one else that he holds the life of his fellows in his hands. An error of judgment in diagnosis, or in execution, lack of familiarity with the latest approved methods of dealing with certain conditions, defects in technic and many other considerations, some of them apparently minor, may decide and frequently do, between a happy restoration to function or to health and a life of invalidism; between life and death. This picture is not overdrawn, as every surgeon within the sound of my voice well knows. It behooves us, therefore, as a profession, at the very beginning of a discussion of this sort, to get firmly fixed in our minds the fact that of the surgeon as of no other man, owing to the exigencies of his profession, the public has a right to demand certain requisites, namely, that he should possess physical, mental and moral qualities of no mean order, and that the ability of the individual to fulfil these requirements should be passed on by competent authority. If I read the signs of the times aright, if the profession does not willingly accede to this demand, indeed, if it does not take the initiative and itself assume control of the machinery of this supervision, the public will rise in its might, take it out of the hands of the profession, where it rightly belongs, and in all probability give another illustration of the all too common experience in our public life of foolish and extreme legislation enacted by those not competent or capable of fully comprehending the real requirements of the situation. In this way the proper abatement of abuses, and the settlement of questions, the advisability and necessity for which have been generally admitted for a long time, is not infrequently indefinitely delayed. Let us consider these questions briefly and in order, for they are fundamental to a proper conception of the subject in hand.

Every surgeon recognizes the fact that the drain that is made on his physical strength and nervous energy in the performance of his professional duties is enormous. His hours are irregular and long, his time is not his own, he must subordinate his own interests to those of his patients. The average lifetime of the surgeon is short. He cannot stand the strain beyond a certain point, and that is the breaking point. The physical aspect of the question is, however, as nothing compared with the responsibilities involved. It is these which kill. It is not necessary to do more than to allude to this fact, which is so well recognized and understood by those present. There are only a comparatively few who are temperamentally so constituted as to stand the inevitable nervous wear and tear incident to the profession. Too little attention has been paid to this fact. However, at the present time I do not see how this aspect of the question can be dealt with by rules or by legislation or in any other way, except for the

conscientious teacher in the medical school to take the time from his busy life to interest himself sufficiently in his students, to study them and know them and their characteristics sufficiently well to advise them for or against surgery as the choice for their life work. But, you say, this is not possible! It probably is not, as medical schools and medical education are constituted at the present time. But the hope for the future development of the profession does not lie entirely outside of considerations such as these. Small classes; personal association and touch with the instructors, that close communion which is so delightful between the devoted teacher and the earnest student, will go a long way toward solving this and many other difficult problems that concern either directly or indirectly the standardization of the surgeon. For it not infrequently happens that the best things that the student receives from his instructor, if he is a real teacher, are not what he gets in the class-room or laboratory, but what he absorbs unconsciously from personal contact, from observation and study of correct methods of thought and work, rather than from precept, or by word of mouth.

Among the requisites necessary for a surgeon is a certain saneness of mind, better understood than described. While now and then some erratic genius will, meteor-like, appear on the surgical horizon, a closer analysis will usually show that like the celestial visitor he shines with great brilliancy for a moment, but leaves behind him little that is tangible or lasting. In general the really constructive, original, scientific work has been contributed by the thoughtful observing surgeon, who has taken the time and given the requisite amount of study to the finding out of the causes of certain phenomena observed by him in the course of his work, or the explanation of certain problems which have hitherto baffled the efforts made toward their solution.

The examination tests, both practical and theoretical, should be prepared with the idea in view of determining the ability of the would-be surgeon in matters of diagnosis as well as treatment, in the science as well as the art of surgery. Information and assistance should be sought from the former instructors and associates of the student in order to determine, as far as possible, his fitness for the performance of the special duties required of the surgeon. As far as it is possible to do so, due weight should be given to the physical and temperamental as well as mental and moral characteristics of the applicant for license to practice surgery. Definite standards along these lines cannot be fixed, from the nature of the case, but certain unwritten ideas and ideals can and should be established and conformed to as far as possible.

What shall we say as regards the moral standards of the surgeon?

How comprehensive shall they be, and how shall they be applied? On a former occasion, I gave expression to my ideas as to the absolute necessity for standards of character, as well as ability and attainment along other lines. It would seem unnecessary on an occasion such as this and before this body of surgeons, composed, as it is, of representatives from all parts of the country, to enter into any extended argument as to the necessity for the requirement of moral tests on the part of those who desire to practice surgery. Unfortunately, the fact remains

that for some reason or other there exists in the minds of certain individual members of this Association, and, if reports are true, a not inconsiderable number, ideas and standards of professional morality so low as to permit them to indulge in certain practices which are unethical and immoral, and which tend to degrade not only those who employ them but reflect on the entire profession. I am speaking, of course, of that species of graft and corruption which is commonly known under the term of "fee-splitting," and which is practiced in a variety of forms. I am well aware of the fact that there is a difference of opinion among surgeons in different parts of the country on this question, but I have never yet heard a man excuse the practice on any other grounds than those of expediency. Every honorable man, I feel sure, condemns it as dishonest and wrong, and as tending toward commercialism and demoralization on the part of those who practice it. It is defended solely on the ground that others do it, that its existence is well recognized, that it is well-nigh universal in some localities, that some of the best men in the profession do it, that one must practice it in order to make a living; all or most of which may be, unfortunately, true. But is it right? Is it honorable? Is it honest? Should we as a profession submit quietly to such a condition of affairs even if it has the endorsement, tacit or open, of individual surgeons of otherwise good reputation and standing, or of local or state medical societies. Fraud it certainly is to divide fees with another, unknown to the patient; to take money that does not belong to you, and weakly constituted as human nature is, corruption and graft are as sure to follow such practices as night is to follow day. Not only this, but the man who will trade on the credulity and trust of his patient, when the test comes, will not always hesitate to jeopardize his patients' life and health by calling in the incompetent instead of the competent surgeon, for the sake of the rake-off.

There is another aspect, however, to this question of the moral standard for the surgeon besides the strictly professional. It must include his relationship, in a large and less personal sense, to the public. What do we find to be the actual facts in the case, for we must deal with things as they really are, not as they ought to be, if we hope ever to accomplish anything in the way of improvement? The personal relations between the medical man, whether physician or surgeon, and his patients are of such a close and intimate, we may almost say sacred character, that no breath of suspicion should taint the reputation or blight the professional life of one who would be a surgeon. He must keep his reputation as clean and his character as spotless as his instruments and his hands. If he would avoid becoming a reproach to his profession, if he would attain the fullest development of his great possibilities, the technic of his private life must be as rigorous and as flawless as that of his operating-room. Some there are, unfortunately, who in spite of flagrant and repeated violations of professional and private honor have attained a high degree of eminence. But that they have been able so to do is due solely to a deplorable lack of appreciation on the part of certain communities in particular, and of society in general, of the fitness of things, and to a disinclination to apply appropriate remedies to disordered social conditions.

As to the personal relations that should exist between patient and surgeon, surely there can be no question. As to the professional relationship, there should be room for little more difference of opinion than in case of the personal relationship, but, unfortunately, there is a decided difference of opinion. For here we are face to face with a discussion of the rights of the surgeon as against the rights of the patient. Is there any real antagonism between the two? How shall each be safeguarded? The patient on his part has a right to demand from his surgical attendant service equal at least to the best that is ordinarily rendered by other competent surgeons under similar circumstances. At once the question may be raised, "By what standards is the efficiency of service to be judged, and who shall determine the custom that prevails in any community?" Admitting the force of these questions but waiving them for a moment, observe the fact that there is also a moral side to this question as well as to the personal relation. The surgeon, if he knows anything, must appreciate the fact that he is or is not competent to do surgery. If in his heart he feels that he is not sufficiently well prepared by education or training to grapple with the many complex problems involved, it is his duty (and he cannot get away from it by any form of subterfuge) to discontinue at once its practice, until by further study and observation, under competent instruction, he has overcome the real objections to his practicing. You will say that this entails unnecessary hardship and expense on an ambitious man, and handicaps him in the race for a livelihood. True; but the good of humanity and the honor of the profession demand that only those properly qualified should be allowed to practice surgery. If under these circumstances he still continues to perform surgical operations and receive fees therefor, he is guilty of a misdemeanor in that he is receiving money on false pretenses. We all make mistakes. I am not now referring to this fact, which every one recognizes as a necessary corollary to human frailty. The true significance of what has just been said will not be misunderstood or lost in this audience, for I am sure that everyone recognizes the difference that exists between the one who habitually, from lack of sufficient training and knowledge, is making serious mistakes in both judgment and execution, and those occasional mistakes common to us all, due to the limitations imposed on us as human beings.

The same moral principle is involved in the matter of the size of the fee. The fact that one can charge and collect a fee several times larger than it should be, does not make it right. The operator, if he knows anything, knows whether or not the services rendered could have been just as skilfully and satisfactorily rendered by any one of a half dozen other surgeons in the same community. He must know too, in a general way, what others in that neighborhood charge for similar services; but if this method is unsatisfactory and the surgeon insists that he has a right to charge anything he pleases for his services, regardless of what any one else may charge, a position which within reasonable limits cannot be questioned, what then is to be the basis of his charge and what are reasonable limits? He may say, "I saved your life." But did he? How does he know? How many times can this be truthfully said? Every surgeon can recall

cases in which he has thought that the patient would surely die and then has seen him go on to complete recovery. The reverse is equally true. Who can say beyond peradventure of a doubt whether this was because of or in spite of treatment? And even if it were literally true that the surgeon had saved life, can the value of human life, of health and happiness and the other complex factors involved, be expressed in terms of dollars and cents? I think not! But the patient has a large income. True, but owing to the legitimate demands from a dependent family and relatives and other just and sufficient causes that cannot be put aside, some persons are poorer with a large income than others, without any financial obligation, are with a small income. No, fellow surgeons, if we would be true to ourselves and to the best traditions of our noble and unselfish profession, we must apply some other standards than these. We must base our charges fundamentally on more definitely tangible and determinable factors than those mentioned. We must consider such factors as previous training and special skill, and the amount of labor and time expended on our part, and the responsibility involved, and then try to adjust and accommodate these to the patient in straightened circumstances, and to keep within certain firmly established bounds in the case of the rich. This question cannot be so easily settled as by reference to a fee table; it must be based on the broad principles of equity and according to certain established standards.

It is not a pleasant task, nor an attractive sight, to wash one's dirty linen in public. But one thing is sure: if we do not perform this unpleasant duty, someone else will do it for us. Is it not high time then that we seriously undertook this urgently demanded reform? Some one, however, will ask, If this is all true, how did it come about? Who is responsible for the deplorable condition of affairs that exists at the present time? Certain it is that such a condition of affairs could exist only where standards of professional ethics and attainment are low. Is it not true that the pollution of the stream is at its source. Let us not shut our eyes to the facts. The medical schools themselves are among the greatest offenders in this respect, by reason of the failure on their part so early and so thoroughly to imbue their students with a code of ethics so lofty, a standard of honor so inflexible, with ideals so high that they are utterly incapable of becoming a party to such debasing and degrading acts as those which we have been discussing. Unless our principles of morality in its broadest sense are deep rooted and firmly fixed, and that early in our professional careers, we are in constant danger of falling when temptation comes. And who is free from it in some form or other? No, in general, our medical schools and the members of their faculties are singularly negligent of their duty, in not inculcating in the medical students under their care, by both precept and example, standards of high living and high thinking. In such soil as this, noxious weeds such as improprieties of conduct toward one's patient or professional brother, fee-splitting, self-advertising, extortionate fees and the like, do not flourish. Reforms, then, such as have been indicated, are sorely needed in the moral tone of our schools, and in the personal conduct and professional example set by many individual members of the various medical faculties. The same thing has been true, to a greater or less degree, in the hospitals. They have reflected the moral and educational tone

of the medical schools. A stream rises no higher than its source. Thanks to the efforts of Codman and others, the standardization of hospitals is no longer regarded as the idle dreaming of a visionary, but in all probability will shortly become an accomplished fact. Make the standards of the medical schools and hospitals what they should be morally, intellectually, scientifically and with regard to efficiency, and the standardization of the surgeon will be rendered a far easier task.

There are certain ways in which these much-to-be-desired reforms can be accomplished. They can be grouped into two main classes, by the state and by the profession itself. It is at once apparent that the average legislature, composed as it is of men of all sorts and conditions, untrained and ignorant of the real needs, is not a fit body to enact laws for the guidance and government of either the profession or the public in matters of surgery, and the proper performance of surgical operations. It is self-evident, therefore, that the only proper body capable of remedying existing evils and providing an adequate and satisfactory solution of the problem involved is the profession itself. There are several agencies within the profession, any one of which might take the initiative. But there are certain obvious reasons why none of these organizations is ideally fitted to do the work. The medical schools which educate and train the future surgeons would seem to be the proper source whence such a movement should originate. But I have just indicated how little is to be expected in this direction. One has but to turn to Flexner's report to the Carnegie Foundation to find the true condition of affairs, so far as the whole country is concerned. Conditions have improved materially since that report was written, and largely because of it. But is any one foolish enough to think that any concerted course of action could or would be agreed on by the medical schools? Does any one seriously think that the necessary legislation effectively to control this deplorable state of affairs could be obtained in anything like a reasonable time? Certainly the past history of these institutions in matters of this sort does not warrant the indulgence of any such hope. No, there is nothing at the present time to be expected from the medical schools as such. Indeed, as has already been stated, they are the chief offenders in that they do not inculcate into their students in such a manner, or to such an extent, standards of morality and ethics, ideals of professional conduct that are so inbred in the student and are so much a part of his very life that after he leaves the medical school he is utterly incapable of anything but the continual practice of the golden rule. This sounds Utopian; but if the medical schools and the individual members of the faculties of those schools did their whole duty by both precept and example, there would be but little need for such a symposium as this, for the standards of professional conduct would be so high for each individual surgeon that instantly its influence would be reflected in both private and hospital practice to such an extent that unconsciously the standardization so much desired by those who have most at heart the welfare of their fellow men and of their beloved profession would be quietly and quickly brought about.

Then there is that great and powerful organization, the American Medical Association, of which this Section is one of the component parts. What of it? One has but to refer to the minutes of its past meetings to

be struck with the paucity of the recorded efforts made to bring about these universally admitted and much-needed reforms. Why this strange lack of interest on the part of the profession as exhibited in its accredited representative body? What is the reason for this apparent indifference and inactivity? Is it a spirit of self-complacency? Is it the fear of washing our dirty professional linen in public? Is it a feeling of pessimism that prompts the question "What's the use? You cannot do anything to stop it." Whatever the reason, is it right to sit still and not make at least an earnest effort to right the wrong that every one knows exists? Is it not true that whether we will or no, in this, as in every other respect that concerns his physical or moral welfare, we are "our brother's keeper?" If our professional brother does not know enough to distinguish between a patient who ought to be operated on and one who ought not to be, and if he does not know how to do the operation properly, he ought not to be allowed to operate at all; and if our lay brother does not know enough to distinguish between the properly trained surgeon and the ignoramus, he should be protected from the result of his own ignorance and folly by differentiating for him between the fit and the unfit, and by conferring on the fit some badge of distinction that the public can readily recognize.

There is already in existence an organization formed for the very purpose of accomplishing the reforms of which we have been speaking. It is as yet young, but vigorous, virile, democratic, free from all entangling alliances, willing, ready and eager to perform this all-important and so long neglected task. Indeed, it has already made its influence and power felt in certain communities and along certain lines. This is well shown by the enemies it has made. It can and will accomplish every one of these desired reforms, if only the profession is ready and willing to cooperate with it in its disinterested endeavor to do the work that is so urgently demanded. This is no time for sulking in your tent, just because you feel that the thing is not being done in your way; because the initiative was not taken by this or that organization, or because it was taken by the particular one that did have the courage of its conviction, and did make an effort to correct the evils that every intelligent member of the profession knows to exist.

I hold no brief for the American College of Surgeons. It needs none from me; and if it did, this would perhaps not be the proper place or the proper time to submit it. What it has already accomplished speaks louder than any word of mine. Nevertheless, as a member of both organizations and a disinterested well-wisher of both, it may not be out of place at this time and in this presence, to express the hope that the older society may see its way clear in the near future to modify somewhat its apparently studied policy of ignoring in *THE JOURNAL* and its other publications the existence of the younger organization. Would it not rather be the part of wisdom to aid and encourage by the weight of its influence and authority every effort made by any responsible, intelligent body of men directed toward the good of humanity and the uplift of the profession? This is no time for the exhibition of petty personal or professional jealousy or spite. The stake is too great! Rather let us get together like men and brothers, bound in a common cause against a common enemy to benefit humanity, to put down corruption and graft, to cleanse our pro-

fessional escutcheon of the foul blots with which it is stained, to elevate the ideals and the whole tone of the profession, to encourage research and study, to increase the efficiency and to raise the standard of every individual surgeon. It would be shameful to delegate these functions to another, to have them usurped by the state, as will surely be the case through failure on the part of the profession, by reason of professional politics or petty jealousies and misunderstandings, to do what it is clearly its own duty to do, namely, to set up certain high standards of character and attainment which must be rigidly conformed to by every one who would practice surgery.

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THE SURGICAL SERVICE IN HOSPITALS*

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In order properly to treat the subject under consideration, it is necessary for us to understand just what is meant by the "surgical service" in a hospital. Naturally we think first of the operating-room, and too often the impression is left, either by writers on the subject, or by hospital surgeons or administrators, that the terms "surgical service" and "operating-room service" are synonymous. To a certain extent this is justified, for the character of the operating-room service may usually be taken as an index of the standard of the surgical service rendered in the hospital. On the other hand, while it is hardly possible for us to imagine a hospital with good surgical service in the wards, but poor service in the operating-rooms, it is perfectly easy for us to conceive of first-class operating-room service and poor ward service existing in the same institution. I prefer, therefore, to consider the subject in its broader sense as covering all surgical work done, with the operating-room work forming but one division of the service, and to my mind, not by any means the most important division. In order to bring the entire field before our view in its proper sense, let me, therefore, propound the following questions, with the suggestion that you attempt to answer them in your own minds as applied to your respective hospitals:

1. If an accident case is brought to the hospital at an inconvenient hour, the injuries including, perhaps, a compound fracture, will the staff surgeon respond to the call, how long will it take him to get to the hospital, and after he arrives, how much personal attention will he give to the care of the patient and how much will he leave to an intern?

2. Are there any patients with uninteresting fractures leaving the hospital with deformed limbs or stiff joints, and if so, does the fault lie with the surgeons, or is it due to improper nursing, or to the lack of sufficient cooperation on the part of the roentgenographer?

3. In what percentage of cases is the diagnosis clearly made in the ward and in what percentage is it reserved for the operating-table?

4. Does the operating surgeon take as much interest in the after-care of the patient as he did in the operation?

* Read before the joint meeting of the Section on Surgery, General and Abdominal, and the Section on Hospitals at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, June, 1914.

5. How large a proportion of primarily clean wounds are found to be infected on the first or second dressing, and how much time is spent by both the staff and the administration in finding out how the infection occurred?

6. What is the condition of your patients at the end of six months or a year after their discharge from the hospital, and how much attempt is made to find this out?

The foregoing questions are not asked for the purpose of disparaging the work of hospital surgeons, since their answers have to do, in many cases, with the question of the efficiency of the administration, as well as with the clinical side. Yet, they will help to bring to our minds some of the perplexing questions that affect the surgical service.

In the work of the bedside, many questions arise as to the relative responsibility of the administration and the staff. Certainly we shall all agree that the hospital officers should carefully avoid anything that might even remotely appear in any way meddlesome, or which might interfere with the surgeon's freedom in the handling of his case. Yet, there are many things which, from their nature and because of the time and manner in which they are done, can be left most safely to the administration. This will apply especially to the assignment to the room or bed, the nursing care and the attendance of the interns. If the surgeon has full confidence in the administration of the hospital, he will be glad to be relieved of these details, recognizing the fact that others can follow them up much better than he. And if he has not such a degree of confidence, he should take his patients to another hospital.

When it comes to the choice of dressing material, the kind of bandages, gauze, etc., that are to be used in the hospital, we have a question much more difficult to decide, unless there is that spirit of cooperation which should exist between the administration and staff of every well-regulated hospital. For on the other hand, we all agree that the surgeon, being responsible for the result of treatment and the recovery of the patient should be allowed to use whatever he believes necessary, within proper limits. Nor should we lose sight of the fact that hospital funds are nearly always limited, and surgeons frequently make requests without considering the expense which will result, and when the substitution of something cheaper could be made without injury to the service. Certainly, no fair-minded surgeon should deny the right of the administration to decide whether, in the ordinary routine of the hospital the dresser should use No. 2 or No. 3 gauze; nor should the administration hesitate to supply the more expensive article for a particular case if requested to do so. For here we are dealing with three very important questions, namely, the interests of the hospital from an administration point of view; the reputation of the surgeon, and—let us not forget—the interests of the patient. In order to avoid constant friction in regard to these minor questions, I would suggest that they be settled once and for all at a conference between the surgeons and the administration, at which the surgeons should be taken into the full confidence of the hospital as to the cost of materials and the financial condition of the institution, and a class of supplies selected satisfactory to all. This having been done, no further interference should be made by the staff as far as the routine work is

concerned. But the administration should be ready at all times to meet special conditions when asked to do so by the surgeon, always bearing in mind that the life or health of the patient is at stake, and avoiding, as far as possible, any policy that might interfere with his interests.

There are many other questions concerning which there is sometimes a difference of opinion. For illustration, should the surgeon have the privilege of selecting the nurse who is to care for the patient; should he select the person who is to prepare his patient for operation; should a particular nurse be allowed to dress a wound or catheterize a patient at the request of the surgeon? To all such questions I would answer, No. For here we have to deal with matters with which the surgeon cannot expect to be familiar and which I believe to lie outside his province. The nurse whom he might select may be more needed for other duties, or for service in some other part of the house, or she may not be sufficiently trained, if a pupil, properly to perform the duties he would assign to her. And he, very probably, is not familiar with the curriculum of the training-school, and most certainly does not know, as well as others, how far a particular pupil has advanced, what may be her standing in her classes, or with what degree of success she has met similar responsibilities when heretofore placed on her. No one should deny his right to say whether or not the catheter should be passed, or to request that special attention be paid a certain patient, or to decide absolutely and without question what preparations for operation should be made. But with the actual carrying out of these orders or the choice of the one who is to do the work, he should have nothing to do.

The question of the proper sterilization of dressing material, sutures, water and instruments is a very delicate one, and it is somewhat difficult to decide who should dominate in the selection of the methods to be used. There certainly is no question as to the surgeon's interest in the thoroughness of this work, or in having it done in such a way that he need not fear for the results. On the other hand, the hospital is just as keenly interested as the surgeon, for the reputation of the institution and its administration is at stake, and the hospital can no more afford to allow loose methods to prevail than can the surgeon himself. Fortunately, the present-day methods of sterilization of dressing materials and instruments is so perfected that there can be but little difference of opinion as to how it should be accomplished or what methods should be used. It becomes, therefore, simply a question of proper training of those responsible for this important work, and of their conscientious devotion to their duties. And this, again, is something that must of necessity be left to the administration of the hospital, as the surgeon is, more or less, helpless in the matter without such assistance and competent cooperation. In fact, while the asepsis of everything used in the surgical service is a matter concerning which the surgeon is profoundly interested, and on which the success or failure of his work so largely depends, yet he cannot come within sufficiently close relation with the processes on which it depends to control them, nor has he the time to give this work his personal attention. It is all the more important that these matters be left in the hands of the administration when a number of surgeons are operating in the same hospital, for there

must be uniformity of methods and definite standards adopted if we are to obtain the best results, and any attempt to allow each surgeon to specify his own methods would lead to a confusion which would be fatal to good work.

In the matter of the preparation of patients for operation, I believe more latitude should be left to the surgeon, for this preparation is so important that it might almost be considered as part of the operation itself, and the personal wishes of the operator should be respected, without question. Yet, a certain hospital standard may well be adopted, if possible, and a regular routine, previously endorsed by the surgeons who are in the habit of operating in the hospital, may be agreed on with advantage, providing it is understood that care is to be taken to prevent the nurses and interns from getting too deeply into a rut, and that the ordinary usage may be changed at any time at the request of the surgeon. In the hospital with which I am connected there is a standard method of preparing patients, adopted some time ago at a conference between the surgeons and the superintendent. This is typewritten and hung in a prominent place on the various surgical stations, where the surgeons can easily refer to it. This is the "house method," and is followed whenever there are no contradictory orders issued. But whenever a surgeon wishes some special method employed, he writes his orders for such changes as he wishes made, without the slightest hesitation. This plan has been in use for about two years, and has saved much confusion and, I believe, has resulted in more thorough work, without the slightest friction.

While all that has gone before is of importance, we must admit that the greatest interest centers in the operating-room. Here we find the finest equipment, the best-trained nurses, and the clock-like precision and semimilitary discipline that appeal so strongly to most of us and leave a lasting impression on the visitor. It is here that the expert operator comes to his own, for he is the unquestioned dictator of his little realm. The tiled floor must be spotlessly white, although a tile of some other color might be just as clean. The walls must be of white marble, although a hard plaster, well enameled, is cheaper and gives a less porous surface and catches less dust. The operating-table must have many movements, and be capable of being placed in a score of positions—at great expense—although only two or three of these positions are ever used. Alcohol, iodine and other expensive drugs must be kept in large, wide-mouthed bottles, in order that they may be freely poured over every one's hands. The surgeon's every movement must be understood, every wish anticipated. Why? I am sure I do not know, unless it is that in our zeal to obtain the most efficient service in this important field, we have made the common mistake of allowing the pendulum to swing too far, and our operating-room service has become top-heavy, both in its organization and in its equipment. And, I believe, hospital administrators are more to be blamed for this than the surgeons. For the surgery is such a fascinating place, and it is such a satisfaction to show it to our visiting friends, that the temptation to magnify the importance of much of the expensive construction and equipment is one to which most of us have yielded at one time or another. Did you ever see a hospital in which thousands of dollars had been spent on marble operating-rooms, resplen-

dently furnished with white enameled and nickeled equipment, while the mattresses in the wards were hard and cheap; or in which expensive drugs were used in the surgery as freely as was water from the taps, while patients were restricted in the quantity of milk and eggs which the institution could afford to furnish; or one in which rubber gloves were used once, then torn from the wearer's hands and thrown away, while the typhoid patients developed bed-sores because there were not enough rubber air-cushions?

I entered an operating-room not long ago and watched its workings. A very competent surgeon, rather above the average in his ability, was performing a simple herniotomy. The construction and equipment of the room had cost thousands of dollars. Assisting the operator were eight trained persons, namely, three advanced pupil nurses, two interns, the anesthetist, the supervisor of surgery and an orderly. This was not the fault of the operator. He had not asked for so many assistants, nor had he planned the operating-room. Yet it was not wholly the fault of the hospital, for there are many surgeons who demand so much attention, and who are so impatient of the slightest delay, that the average hospital is compelled to maintain too large an organization in its surgery because of the fear that some operator will have to wait too long for the threading of a needle, and that the efficiency of the surgical service will be criticized. Yet, if it be true that every unnecessary person admitted to an operating-room during an operation becomes a source of danger, then we would have had better surgery, and the patient's chance for an uninterrupted recovery would have been increased if the number of assistants had been cut in half. And, perhaps, the money invested in Italian marble would have been better spent if used in renovating the mattresses in the wards. I believe that this situation is becoming more and more realized both by surgeons and by hospital administrators, and that the time is fast approaching when much of the fussy, unnecessary and expensive equipment and organization of our operating-rooms will take its place along with the carbolic spray and bichlorid solutions, and simpler methods will be recognized. I am glad to say that the first step toward this has already been taken in our hospital, as well as in many others.

The surgical clinic is a bone of contention in many hospitals, and there is still some division of opinion, at least among the so-called laity, as to whether or not it should be allowed in a public hospital. There are many questions in this connection which will occur to those of you who have had experience with them. Are they good or bad for the hospital as a whole? Are patients often injured by them? Is the asepsis of an operating-room containing a dozen students as perfect as is the case when no one is admitted except the patient and the necessary workers? Should the superintendent of the hospital have the power to forbid the use of an individual patient for a clinic, even though the attending surgeon certifies that the patient's condition warrants it? Is the consent of the patient to his being used at a clinic sufficient, provided the patient be of legal age and rational? Should a surgeon be given the right to hold a bedside clinic in a large public ward, even with the full consent of the patient to be used, if it in any way annoys other patients in the same ward, many of

whom may be under the care of other surgeons who who are not interested in the clinics?

It is my honest opinion that properly conducted clinics, given by the right kind of men, and properly supervised, are of immense value to a public hospital. I believe that they attract to the hospital staff the best and most progressive men, and that they are a constant stimulus to all from the operating surgeon to the interns and nurses, to do the very best grade of work—if for no other reason than that they cannot afford to do otherwise. For your severest, and sometimes most intelligent critics, are found among the students of the junior and senior classes.

The important point in connection with all such clinics, however, is that they must necessarily be under the absolute control of the administration of the hospital, in every detail, for the hospital is still responsible for the care of the patients used, and for the general order of the wards, and is usually called on to furnish the necessary nurses, orderlies and interns for the proper conduct of the clinics, and to meet the expenses incurred, which are often not inconsiderable. They should very distinctly be hospital clinics, that is, they should be made a regular part of the hospital work, which the students are invited to attend, and not by any means allowed to become the clinics of any medical school, given in the wards of an independent hospital. This may at first thought seem like a distinction without a difference, but the difference is there, and it is a very important one. The foregoing does not, of course, apply to those hospitals that are under the control of a medical school or which form a part of the school organization. I refer more especially to public hospitals, the chief object of whose existence is the care of the sick, and in which clinics must always remain of secondary importance.

In conclusion, let me suggest a scheme of organization for surgical service of a large public hospital:

The staff should be divided into three ranks, namely, the chief of service, associates, and assistants. The chief should be made responsible for the work of the entire service, and should represent the service in the councils of the staff. Associates should be men competent to do major surgery, and should be required to attend the hospital every day, spending as much time as necessary to take care of the work. Assistants should be younger men, willing to do such work as may be assigned to them. They should stand in a position between the intern and the associate. They should be made responsible for the proper records on the history sheets, for orders for laboratory and roentgenographic examinations, and, in a general way "work up" the case for the associates and chief.

All patients admitted should be assigned to the chief, who should be allowed to take personal charge of the case, or reassign it to one of his associates, or assign such part of the treatment to an associate as he deems best. Operations should be performed either by the chief himself or by an associate, but no associate should be allowed to perform an operation without the knowledge and approval of his chief, except in an emergency when the chief cannot be reached. An assistant should not be allowed to operate unless he be assigned operations of a minor nature by the chief. When a patient is assigned to an associate, the chief still should remain responsible for his proper care and treatment, and should be

expected to take personal charge again at any time if it seems best for the patient, as it would still be his patient.

Service in all ranks should preferably be continued. Such a service has been in operation in the Minneapolis City Hospital since last October. The staff is divided into two divisions, known as Division A and Division B, organized alike. Thus we have two chiefs of surgery, and two sets of associates and assistants, with a little friendly and healthy competition between the two divisions. Patients are assigned to the divisions alternately, in the order of their admission. The surgical specialties are in charge of the proper specialists, who rank as associates, and are responsible to the chief of surgery of their respective division. Associates and assistants are appointed by the superintendent of the hospital, on the nomination of the chief under whom they are to serve. The medical, and the obstetric and gynecologic services have a similar organization. So far this organization has been an experiment, but it has been such a success, and has resulted in such an improvement over the old rotating organization, that, with a few changes in minor details, it is to be made permanent.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. FINNEY AND COLLINS

DR. ROBERT L. DICKINSON, Brooklyn, N. Y.: In the study of efficiency let us note, for example, how men handle their scissors. The German does not take his eye off the operating field. The same assistant or nurse has for years given him the instrument the moment he needs it, in order that he may avoid looking away from the work, distracting his attention and wasting other moments. Other surgeons lay down the instrument on a particular spot, to be found there, automatically by the trained hand. Unbelievably common is the practice of dropping the scissors on the instrument table, among others. When needed, the eye must leave the field of work, focus on a pile of tools, recognize the thing wanted and return to the work, perhaps hunting for a particular place in the field. At present the visiting surgeon undertakes a number of more or less related activities. Yet he cannot effectively wield these details except the surgical handiwork. Every three or four months in most of our hospitals, a new surgeon picks up a green team, saying "We will change our methods." The new régime provides no typewritten or printed instructions. By the time the group is working well together, a new leader or a different set of nurses and house officers is installed. Organized, continuous, quick, finished work is possible, under such conditions, only to genius. Therefore, the replanning of responsibility and authority must accompany the installation of a method of scoring by which work may be gauged. Who calls down the senior surgeon in a hospital and president of its staff for moderate delinquencies or mediocre results? Who knows exactly, anyway? The fielding average of a baseball player is known, and government officers regularly rate the merit and character of work of their employees. Our hospitals, on the contrary, have no system of detailed records by which to promote or withhold promotion. When once instruction cards are made out for every procedure, it is a relatively simple matter for the inspector to check up agreement with schedule and directions—allowing for emergencies. All processes of ordinary activity being standardized and written down, the instructor can be constantly at work and the teaching is not haphazard. Lapses of all kinds being matters of record, in whatever department of a man's activity they occur, the "disciplinarian" corrects, advises, rather than punishes. That business belongs to the executive committee or its representative. Scientific management involves, first, a planning department, which will have representatives from both the executive and the professional staff, to study the order of work, instruction cards, time

and cost; secondly, the performing department, with four chief functionaries—the instructor, the inspector, the disciplinarian, the repair man, and the body of workers, doctors, nurses, clerks, etc., under professional and executive control, according to their several duties. Progress is thus not hindered nor change for better methods hampered.

DR. JOHN A. HORNSBY, Chicago: In my own hospital work I have found that often there is a good deal of incoordination between the surgeon and the administration. I found that the surgeon had not the point of view of the administration of the hospital and that the administrator had even less of the point of view of the surgeon. If hospital men could meet in conference with men whose patients are in the hospital to be cared for, we might do the work a little better. That is why I asked for the benefit of a conference with this Section. Sometimes I have thought that it would be a most excellent thing for many reasons if we could have a great big war. I am quite sure if there were a great war in this country that surgical procedures would be very vastly changed. I know a surgeon who cleans up eight men for an operation; another who cleans up three nurses besides his surgical assistants, and I have sometimes wondered not only whether he is getting the best out of his work in that way, but also whether he ever thought of what these people mean to the administration of the hospital when they are tied up. In my own hospital work with 350 patients we had 24 interns and yet sometimes 16 of these men were cleaned up in the operating-rooms in the morning, and there were from 20 to 50 visiting physicians in the hospital who were entitled to some sort of intern service which it was impossible to give them. That meant four or five times three nurses in the operating-rooms for all the rooms and I have wondered whether that was what the gentlemen of the operating staff really want; whether your technic had not just grown by what it fed on; whether you had not found that it was a good deal easier to add people than it was to make any other changes. It did not appeal to you that these people were costing a lot of money, and that the whole operating force was taxing the other administrative parts of the hospital. It seemed to me that if we could talk about these things we might reach some conclusion. I am quite sure that the surgeons in any good hospital represented here, if they appreciated the fact that they were tying up all the other service of the hospital for a morning, would say, "Why, it is not necessary at all for us to have four or five men each; cut out two or three of them." Therefore I say if we had a war and military surgery had to be done we would get back to some simple principles. If the hospital surgeons could confer with the hospital administrators and appreciate some of the difficulties of administration, we could arrive at more economical methods of procedure.

DR. H. T. SUTTON, Zanesville, Ohio: I have no defense to offer for the incompetent, but I do believe we should be just as much concerned, perhaps more, about the carelessness and indifference of the men who have achieved renown, as we should about the ignorant and inexperienced and those who have not had opportunities to perfect themselves. I do not consider that there is so much difference in the intellect and skill of surgeons as there is in the conscience.

DR. JOHN M. T. FINNEY, Baltimore: With regard to the apparent misapprehension of my point of view, I may say that I should be the last one to cast any aspersions on the physician from the small town. It is just that man more than any other whom we wish to help. There are honest and dishonest men among these just as there are among any other class of physicians. The honest man we wish to help. The prime aim of the organization is to help. The dishonest men we want to put out of business if there is any way to do it. As to the degree, there also seems to be a misapprehension. All medical colleges give the degree of M.D. and we are aiming to differentiate between the degree M.D., which entitles him to practice medicine after passing the State Board, and a degree which would permit him to practice surgery. Standardization aims to prevent men from practicing surgery who only know medicine, and to try to create a class of surgeons who are competent.

TESTING THE EFFICIENCY OF THE COLLATERAL CIRCULATION AS A PRELIMINARY TO THE OCCLUSION OF THE GREAT SURGICAL ARTERIES

FURTHER OBSERVATIONS, WITH SPECIAL REFERENCE TO THE AUTHOR'S METHODS, INCLUDING A REVIEW OF OTHER TESTS THUS FAR SUGGESTED (ABRIDGED *)

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The advantages of a preoperative knowledge of the possibilities of the collateral circulation—that is, of the behavior of the peripheral circulation in the dependent regions and organs after the occlusion of the main surgical arteries—is seemingly so obvious to all those who have kept pace with the progress of vascular surgery, that to insist on the great importance and utility of the methods by which such preliminary knowledge can be obtained would seem superfluous.

Nevertheless, the majority of surgeons have up to the present time looked on the testing of the collateral circulation largely as a matter of theoretical interest, and do not attach much practical importance to the principle itself or to the tests by which it is applied. There is excuse for this in the fact that these tests are only of recent development, and have not yet found their way into the popular text-books, nor have they received that recognition by the great surgical teachers that their importance deserves.

Since the advent of the suture as a conservative agency in preserving the continuity of the large vascular trunks, a new technic in the plastics of the blood-vessels has placed a number of procedures at the disposal of the modern surgeon which were unknown to his predecessors. Notable among these resources are:

1. The ease with which a *total* can be transformed into a *partial* or *gradual* occlusion of a blood-vessel, without damage to its walls, by the use of removable metallic (aluminum) bands.

2. The possibility of restoring the lumen of a *partially* injured artery by lateral arteriorrhaphy.

3. The possibility of restoring the continuity of a *completely* divided artery by (a) an end-to-end anastomosis, or by (b) the interposition of a vascular graft (preferably venous and autogenic).

4. The possibility of utilizing the sac of an aneurysm by which a restorative or a reconstructive operation may be performed with preservation of the artery and without disturbance of the surrounding parts (endo-aneurysmorrhaphy).

The impetus given to the new technic by the success of these vascular plastics in experimental laboratories has prompted many enthusiastic surgeons, in the present generation, to resort to suture methods in practice, without a sufficient discrimination, and has led to the performance of many difficult and uncertain operations (circular suture, venous grafting and the so-called "ideal" operation of Lexer), which could have been easily dispensed with if the resources of the collateral circulation had been previously tested.

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914

* Because of lack of space this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints.

On the other hand, the older surgeons have been equally at fault in ignoring the value of the tests of the collateral circulation, thereby incurring serious and fatal errors in operations which could have been avoided or modified by a proper and timely application of these tests and by careful study of the resources of the collateral circulation before attempting an operation.

We have now advanced sufficiently in our methods of testing the efficiency of the collateral circulation before undertaking operations on the blood-vessels, to abandon as obsolete and pernicious the old empiric practice of trusting blindly to the admitted resources of the collateral circulation. The time has now come when every progressive surgeon must regard it as his obligate duty to investigate and ascertain, by actual tests, what the behavior of the peripheral circulation will be whenever an operation is contemplated in which the parent vascular trunk is liable to be involved. This is no longer a matter of academic or theoretical interest, but a subject of practical, vital importance in the treatment of such cases.

Will fatal coma or brain complications follow the ligation or excision of the carotid, when operating for aneurysm or extirpating a tumor of the neck? Will the limb become gangrenous when the subclavian, axillary, brachial, iliac, femoral or popliteal is ligated or excised? If such is likely to be the result, according to the tests, what is the surgeon going to do about it? These are the questions that are put to the surgeon of the present, who, with means of obtaining this information before undertaking the operation, and with new technical resources at his disposal, has to face new and graver responsibilities which did not enter into the calculations of his predecessors.

The experience of modern wars, especially those of the Russo-Japanese conflict, and the latest developments of the Balkan campaigns, have shown the enormous and growing importance of vascular injuries in military surgery. The frequency of vascular injuries, especially of traumatic aneurysms, has given this branch of surgery a claim on the technical training of the military surgeon that has become a new and salient feature in his education. But the exigencies of the battle-field and of the field hospitals will often preclude the possibility of applying such careful tests to the collateral circulation as are applicable in the more conservative and tranquil conditions of civil practice or in the reserve hospitals. Furthermore, the subjects of vascular lesions in warfare are, as a rule, healthy, vigorous, young soldiers or recruits with comparatively normal arteries, free from the general ages of arteriosclerosis or atheroma, and with and chief, strong hearts. On the other hand, in civil

All patie, the vascular lesions which come to the surgeon, who is largely pathologic—chiefly aneurysms which of the case, of subjects past middle life, who, in addition to assign such suffer from cardiovascular diseases, and in he deems best, clusion of the main artery is liable to be either by the chieangrene or other evidence of an inefficiency associate should circulation. Hence the importance that tion without the know methods of testing the collateral circulation except in an emergency is greater than in military practice. An assistant interesting to note that it is to the reached. An assistant protkow, von Oppel, Henle, von operate unless he be ass. protkow, von Oppel, Henle, von nature by the chief. \ Whithers who have served in the an associate, the chief still an campaigns, that we owe a for his proper care and te, in Europe at least, to the ollateral circulation.

Now what are these methods or tests? They may be briefly summarized as follows:

1. *Quenu and Muret Sign*.—The bleeding of the peripheral parts on puncture or incision while the main trunk of the limb is being compressed. In discussing the treatment of popliteal aneurysm, Quenu and Muret¹ say:

To verify this sufficiency of the collateral circulation, which is so important, there would be, in our opinion, no objection to expose and cut into the dorsalis pedis artery at the time of the operation, and thus determine if the compression of the popliteal above the sac will be followed by bleeding or a suppression of the circulation in this artery.

[If no bleeding follows the compression of the main artery, it will indicate an insufficiency of the collaterals.]

The fallacy underlying this test is that the pedal pulses (dorsalis pedis and posterior tibial) are often totally suppressed in popliteal and other aneurysms of the lower extremities, and that scant, if any, hemorrhage will occur from the peripheral vessels, and yet the nutrition and circulation of the foot are well preserved, even though weeks and months may have elapsed after the pulses have been lost. In these cases the circulation and nutrition of the peripheral parts are well preserved by impalpable collaterals after the main channels of the circulation have been blocked by pressure, thrombosis, embolism or atheroma. Furthermore, apart from the importance of avoiding open trauma in the peripheral parts, in which the circulation is most likely to suffer, it is desirable that the sufficiency or insufficiency of the collateral circulation should be determined long before an operation on the aneurysm is performed, in order that suitable measures may be applied to develop the insufficient collaterals. Finally, this mode of demonstrating the persistence of the collateral circulation is unnecessary, as there are other means of determining quite clearly the resources of the collateral circulation without injury or sacrifice of the peripheral vessels.

2. *Delbet's Sign*.—The formation of an aneurysm, or a tumor in the course of the main artery of a limb, is often followed by the gradual or sudden obliteration of the peripheral pulses. When this occurs, from any cause (mechanical compression, thrombosis, embolism or atheroma) without apparently affecting the nutrition or vitality of the extremity, it may be concluded that the collateral circulation has been fully established and that the obliteration of the main trunk by operation can be undertaken with safety to the dependent limb.

This observation has been so well confirmed by experience that it deserves special recognition as of decided clinical importance. Pierre Delbet has so frequently and lucidly interpreted the significance of the suppressed peripheral pulses in this condition that the combination—aneurysm or tumor, absent peripheral pulses, living limb—may well be designated as Delbet's sign.² Arrou, Ricard, Monod and Vanverts³ and others likewise insist on the value of this sign, and my experience has been so convincing that I believe it deserves more prominence than has been given it by systematic writers on the subject.

1. Quenu and Muret: Le traitement moderne des anevrysmes artérielles poplités, *Rév. de Chir.*, 1910, xli, 282.

2. Delbet, Pierre: Extirpation d'un anevrisme poplite, guérison, *Bull. et mém. Soc. de Chir.*, 1909, xxxv, 13.

3. Monod and Vanverts: Chirurgie des artères (*Rapport au xxii Cong. Franç. de Chir.*), Paris, 1909; Le traitement conservateur des anevrysmes et des hematomes, *Rev. de Chir.*, November, 1911.

In dealing with arterial and arteriovenous aneurysms there are many conditions in the aneurysm itself and in the peripheral arteries which are very suggestive and permit the experienced surgeon to foresee, without the application of any special test, the behavior of the peripheral parts after an obliterative operation on the main artery. While the consideration of these conditions would involve too great a digression from the main object of the present discussion, and while recognizing the fallacies that underlie an *a priori* interpretation, it is nevertheless quite evident that the more active an aneurysm, the more rapid its growth, the more expansile its pulsations, the louder its bruits, the less clot it contains, and the more palpable and vigorous the peripheral pulses beyond it, the more cautious should we be in our preparations for attacking it; the more certain should we also be to apply the tests that will give us additional and more positive information in regard to the status of the collateral circulation after its obliteration.

3. *The Henle-Coenen Sign*.—Henle's sign, originally described by Professor Henle⁴ of Dortmund, Germany, and by his assistant, Stoltz,⁵ was also independently described by Coenen⁶ of Breslau, as the result of his experience in the Balkan campaign. It is applicable only in the field of operation when the injured artery is exposed above and below the lesion, or when the sac of an aneurysm is laid open with its proximal and peripheral openings exposed. If blood flows from the peripheral opening in the aneurysm, while the proximal end is compressed with a clamp, it is presumed that the collateral circulation is sufficient.

4. *Von Frisch's*⁷ (Vienna) *Three Signs* are the outcome of his experience in vascular surgery during the recent Balkan campaigns. Von Frisch's test is also applicable only in the field of operation. According to this observer, if the proximal side of an injured or denuded vessel is compressed, the efficiency of the collateral circulation may be demonstrated by the following three signs:

(a) Normal, or approximately normal, coloration ("living color") of the periphery. (This sign had been previously insisted on by me.)

(b) Arterial hemorrhage from the peripheral opening of the injured vessel. (This is only a repetition of the Henle-Coenen sign.)

(c) Venous stasis below (peripheral side) of the clamped main vein (von Frisch).

This third sign is the one on which von Frisch lays particular stress and claims as an original observation.

If, after clamping the main artery, compression of the satellite vein is followed by dilatation of its peripheral tributaries, and the venous turgescence is repeated clearly and unmistakably every time the experiment is tried, the sign is positive that a sufficient collateral circulation exists. This sign (venous stasis on compression of the parent vein) may prove decisive when the other two fail.

He believes that Sign 1 is distinctly positive, no other proof of a collateral circulation is required, and with this I agree. He regards the Henle-Coenen sign as fallacious and liable to erroneous interpreta-

tion, as the distal ends of the wounded artery may spurt in the wound and yet no blood reach the periphery. In this I also thoroughly agree. When all these signs fail, then it is plain that the collateral circulation is inadequate and that circular arteriorrhaphy, with or without venous grafting, is in order. If all three are present, or No. 1 and No. 3 separately, no arteriorrhaphy is required; but a simple obliterative ligation will be sufficient.

The signs and tests described by von Frisch (which include the Henle-Coenen sign) are undoubtedly valuable in emergencies. Practically the same observations have been utilized in my practice, and theoretically by others in a different way; but since they are applicable only in the course of the operation, their preliminary and prophylactic value is lost. They are of value in dealing with wounded bleeding arteries, but, even in the emergencies of the battle-field or field hospitals, an effective application of the technic of circular arteriorrhaphy (which von Frisch has in mind) is almost impossible. When fully established aneurysms exist, whether arterial or arteriovenous, it is evident that the chief benefit of the tests of the collateral circulation is to be obtained before any operation is performed and not during the operation itself, when the operator has no alternative but to proceed with the operation to a finish, whether the collateral circulation is shown to be efficient or not. According to v. Frisch, if the collateral circulation should prove to be insufficient, all that the surgeon could do would be to extirpate the sac (if this exist) and proceed with circular anastomosis, with or without the interposition of venous grafts—a very uncertain and problematic conclusion.

Our aim in testing the collateral circulation is to avoid complicated and uncertain operations by the testing, whenever possible, in anticipation of the operation, by means that will furnish the information without trauma, and that will permit of postponement of the operation in order to apply such prophylactic measures as will develop a sufficient collateral circulation.

5. *Korotkow's Test* (St. Petersburg, 1905-1906) depends on tonometric and sphygmomanometric measurements of the blood-pressure in the peripheral parts. It is the result of this distinguished surgeon's experience in the Manchurian campaigns, and has been adopted by von Oppel, Petrov, Fedoroff and other Russian surgeons, being especially brought into prominence by von Oppel⁸ in 1908. If the peripheral blood-pressure, as shown by the manometer (a modified Gaertner's tonometer) is more or less sustained after compression of the main trunk immediately above the aneurysm, then the collateral circulation is adequate and the artery or the aneurysmal sac may be extirpated or obliterated. If, on the other hand, the blood-pressure falls to zero, it is evident that the collateral circulation is inadequate and that no chance should be taken with an obliterative operation, or with any procedure whatever (ligation, extirpation) which will possibly occlude the parent artery. The color reaction in the individual digits, which is the basis of the tonometric test, is of very difficult demonstration in cyanotic or pale extremities, especially in the deformed toes of many subjects—negroes particularly. After repeated trials in the lower extremities I have been compelled to abandon it as impracticable and to substitute for it a color test on a much larger scale and of far easier application, which will be subsequently

4. Henle: Zur Indikationsstellung bei der Operation der Aneurysmen und bei den Gefässverletzungen, *Zentralbl. f. Chir.*, 1913, No. 3, p. 91; *Verhandl. deutsch. Chir. Gesellschaft.*, 1912.

5. Stoltz, K.: Eine Indikation zur Wahl der Operationsmethode bei Aneurysmen, *Beitr. z. klin. Chir.*, 1914; lxxviii, 452.

6. Coenen, H. (Breslau): Zur Indikationsstellung bei der Operation der Aneurysmen und bei den Gefässverletzungen, *Zentralbl. f. Chir.*, 1913, No. 50.

7. Von Frisch: Zur Indikationsstellung bei der Operation der Aneurysmen und bei den Gefässverletzungen, *Zentralbl. f. Chir.*, 1914, p. 89.

8. Von Oppel: *Arch. f. klin. Chir.*, 1908, lxxxvi, No. 1.

described. E. Wolff⁹ of Lexer's clinic, Kruger¹⁰ of Riedel's clinic and Tcherniachowsky¹¹ of Kiev all agree on the difficulties and uncertainties of the original Korotkow test.

6. *Pachon Test*.—On the same lines as the Korotkow test is the application of the Pachon oscillometer, which depends on the records of the blood-pressure in the peripheral parts to determine the existence of the circulation in these parts after the temporary occlusion of the main artery. The Pachon oscillometer has been applied to the exploration of the permeability of the arteries in senile and other forms of peripheral gangrene, with the view of determining the proper line of amputation, and has done satisfactory service in the hands of Guyot and Jeannenay,¹² Bordeaux, and has been utilized by Cowadias¹³ in the study of aneurysms, and very lately by Gosset,¹⁴ Paris. In a case of traumatic arteriovenous aneurysm of the right subclavian vessels, recently reported by this surgeon, extirpation of the sac, with the quadruple ligation of the artery and vein, was followed by recovery. Gosset utilized the oscillometer of Pachon to test the peripheral circulation in the hand and arm. The arterial tension, on the day before the operation, was 10 on the affected side; 15 on the normal. On the night following the operation, the ligated side registered 9. Thirteen days after the operation the oscillometer registered 12, showing the reestablishment of the collateral circulation, though the peripheral pulses could not be felt.

My experience with the Pachon instrument is too limited and too recent to permit at present of a fair statement of its value; but it is well worthy of consideration and further investigation.

7. *The Tuffier and Hallion¹⁵ Test* is based very much on the principle of von Frisch's venous turgescence when an obstruction is placed in the way of the returning venous circulation while the main artery is compressed. Their test is applied as follows:

A circular band, or elastic cord, which may be easily tightened or relaxed, is made to encircle the extremity at the part desired, for instance, at the ankle joint above the malleoli when the foot is under observation. If this band is tightened, it will compress the veins and thereby interfere with the returning circulation, causing a marked venous turgescence and swelling of the foot; the flow through the arteries will not, however, be interfered with. If this maneuver is repeated while the main artery of the limb (femoral) is compressed, the veins of the foot will swell only on condition that sufficient arterial blood is brought to the foot by the collaterals. If this venous turgescence does not occur, it is plain that there is no collateral circulation, and, vice versa, if swelling occurs it is also evident that the arterial collaterals are efficient. This method was applied by the authors in a case of popliteal aneurysm with a voluminous sac. The object of the experiment was to determine whether the limb

would survive an extirpation of the sac with the ligation of the main vessel, or if, in default of a collateral circulation, a circular arteriorrhaphy would be required.

The chief fallacy of this method lies in the fact that in any case of aneurysm or injury to the blood-vessels of extremities, there is already a considerable edema and venous stasis of the limb from obstruction to the veins and lymphatics on a level with the lesion, and that the accurate observation of the swelling or venous turgescence, in such cases, is not only difficult but impossible. Its usefulness is, therefore, limited to certain favorable cases; but it will be worth remembering in connection with other tests.

8. *Prof. G. N. Stewart's¹⁶ (Cleveland) Calorimetric Method* of estimating the quantity of blood circulating through a part in a given period of time is especially applicable to the extremities (hands and feet). It depends on the fact that the amount of heat produced by a part, like the hand at rest, is negligible in comparison with the heat conveyed to it by the arterial blood. If, then, we determine the amount of heat given off by the hand to a calorimeter, in a given time, and know the temperature of the incoming (arterial) and outgoing (venous) blood, we can calculate how much blood must have passed through the hand in order that it might give off this amount of heat. The quantity of heat given off is estimated by putting the hand or foot into a calorimeter specially constructed for the purpose. The quantity of blood in grams flowing through the extremity in the time of the experiment is given by the formula: $Q = \frac{H}{T - T^1} \cdot \frac{1}{s}$ where Q is the quantity of blood, H the heat given off by the hand, T the temperature of the arterial blood, T¹ the temperature of the venous blood and s the specific heat of blood.

The importance of this method in determining the vitality of the peripheral parts after the temporary obstruction of the main artery of the limb, and thereby testing the sufficiency of the collateral circulation in the extreme periphery, is obvious. It is evident that since the amount of blood circulating in the extremity is gaged by the degree of heat registered by the calorimeter, the amount of actual circulation in the part can be very approximately estimated. For instance, in a successful ligation of the innominate for subclavian aneurysm, recently reported by Dr. Carl Hamman of Cleveland, the patient was subjected to the calorimetric test by Stewart himself. Six months after ligation of the innominate it was found that the blood flow on the affected side was equal to over 8 gm. per hundred c.c. of hand per minute, which is as great as that of the normal hand. This was a great improvement over the rate of blood-flow observed two months previously, when the flow in the right hand stood as 1:3.5. At the last examination in July, the rate of flow stood at 1:1.3, which is practically equal in both hands.

This observation is in itself quite convincing of the value of Stewart's calorimetric method in showing, first, the precise condition of the peripheral circulation before the occlusion of the main trunk, and thereby showing the efficiency or inefficiency of the collateral circulation; second, it also permits the observer to determine the further development of the collateral circulation, and third, it also permits the differentiation between disturbances in the peripheral circulation that are due to vascular or to non-vascular (neural) causes.

9. Wolff, E.: Beitr. z. klin. Chir., 1908, lviii, No. 3.

10. Kruger: Arch. f. klin. Chir., 1910, xci, Nos. 2 and 3.

11. Tcherniachowsky: Deutsch. Ztschr. f. Chir., 1913, cxxiii, 1.

12. Guyot and Jeannenay: L'Oscillomètre sphygmomanométrique de Pachon appliqué à l'exploration de la perméabilité artérielle dans la gangrène, Communication à la Société anatomique clinique de Bordeaux, Séance du 5 Juin, 1913, Jour. de Med. de Bordeaux, 1913, lxxxiv, 607; Jour. de chir., 1914, xii, 193.

13. Cowadias, A.: Etude comparative des tensions artérielles des deux membres supérieurs et inférieurs; applications cliniques dans les aneurysmes aortiques et les artérites des membres inférieurs, Soc. de Biol., Séance 7 Dec., 1912; Semaine méd., 1912, No. 51, p. 611.

14. Gosset: Bull. et mém. Soc. de Chir. de Paris, Dec. 24, 1913, p. 1794.

15. Tuffier and Hallion: Sur un procédé permettant de prévoir que l'irrigation sanguine persistera dans un membre après ligature de son artère principale, Soc. de Biol., Paris, Séances 7 Dec., 1912; Compt. Rend., Semaine méd., 1912, No. 51, p. 610.

16. Stewart, G. N.: Studies on the Circulation in Man, Harvey lectures, series 1912-1913, p. 150.

We must therefore regard Stewart's method as a distinct acquisition and a decided progress in the methods of determining the efficiency or inefficiency of the collateral circulation. Its value as a practical test in deciding on the indications for either the obliterative, reconstructive or restorative operations must be accepted as proved. To what extent this typical laboratory method can be utilized clinically in surgical practice cannot be determined at present. It is evidently not applicable to emergencies or to the demands of routine surgical practice; but as an addition to the surgical resources in well-equipped hospitals in large cities, working in connection with physiologic laboratories, such a method may render very effective assistance in practice. In its present form, its use must be exceptional and it must yield to other simpler methods that are immediately available, and that have been found practically reliable in my practice.

9. *The Author's Methods.*—Finally, I would renew attention to the simple methods of testing the collateral circulation which I devised in 1907 and have adopted in my practice since that time with increasing conviction in their reliability, simplicity and general utility. These tests I have found to be of the greatest value in determining the indications for my obliterative, restorative and reconstructive operations for the cure of aneurysm, and no patients are now operated on in my clinics without a preliminary and systematic study of the circulation by means of these tests. These methods involve two procedures, according to the region involved and the artery to be tested:

(a) The first is the hyperemia reaction, or living color test, suggested by Moszkowicz¹⁷ (Vienna, 1907) method of determining the limits of the living tissues in actual or threatened gangrene of the extremities, caused by arterial disease or obstruction, preparatory to amputation. While the purpose and technic of Moszkowicz' and my procedures are entirely different, they are similar in utilizing the hyperemic blush that follows an artificial ischemia in determining the limits of an adequate circulation. This test is reserved for the extremities, and is applicable to the limbs wherever it is possible to compress the main or parent artery of the limb, preferably with a mechanical compressor of the type of my own devising, which exercises pressure on the main vessels with the least possible interference with the collateral circulation. The principle on which this test is applied is based on the fact that if the main trunk is compressed in close proximity to the lesion (wound, aneurysm, tumor) sufficiently to arrest the pedal pulses, or "still an aneurysm," the distal parts can be supplied with blood only through the collaterals. In order to make this test more effective and demonstrative a complete ischemia of the limb is obtained, before the compressor is tightened on the main artery, by applying an elastic bandage (Esmarch) from the digits (and including these) to the level of the lesion, usually an aneurysm. Then the compressor is adjusted until the aneurysm is absolutely stilled by firmly compressing the parent artery, and the elastic bandage is allowed to remain *in situ* for ten minutes in young subjects, and five or six minutes in the aged. The bandage is then removed while the main artery is completely occluded, as shown by the collapse and stillness of the aneurysm. Immediately on the removal of the bandage, a hyperemic blush descends rapidly

down the limb, and progresses onward to a variable extent, usually in proportion to the development of the collateral circulation. More often, the hyperemic wave stops, even in healthy adults, at a distance of 5 or 6 inches from the compressor, or about one-fourth the distance down the limb from the level of the compressor. It then continues, in a subdued color and with irregular distribution, to travel toward the periphery; but the extreme end of the limb, foot or hand, and especially the digits, retain a cadaveric, waxy, lifeless pallor for several seconds, which may be prolonged to ten or forty minutes or even longer, according to the development of the collaterals. Then the waxy, bloodless color changes in patches to a pale, but living color, which appears in various preferred areas, and gradually spreads uniformly and more or less intensely over the limb. In cases in which the collateral circulation is unusually developed, the hyperemic wave spreads in a few seconds throughout the whole limb as if the main artery had never been compressed. If the compression is kept up long enough, there may be a temporary congestion, mottling and marbling of the skin, which is due to the simultaneous compression of the main vein. This is an additional sign that an efficient collateral circulation exists, as the veins could not become turgid without blood supplied by the collaterals. Thus far we have applied this test to over twenty-six cases of aneurysm and other lesions in our clinics, exclusive of those observed by other surgeons in the United States and abroad, and the conclusions furnished by this test have been invariably confirmed by the operative demonstrations and results. In several of these cases the reaction has been so long delayed that operative interference has been postponed for days and weeks in order to develop the collateral circulation by systematic compression of the main artery applied conjointly with dry hot air baths and vigorous massage of the extremities, as well as resorting to other measures calculated to increase the blood-pressure. In this way a decided shortening in the period of cadaveric pallor during compression of the main artery has been obtained, sufficient at least to justify confidence in the efficiency of the circulation and in the safety of the operation.

(b) The second test is based on the preliminary occlusion of the main artery with the pliable and removable aluminum bands first described in 1911 in a joint communication¹⁸ to *THE JOURNAL* by Dr. C. W. Allen and myself. It is applicable to all arteries of the neck and trunk which cannot be effectively occluded by mechanical compression. With the valued collaboration of my assistant, Dr. C. W. Allen, and other members of our staff, Drs. Gessner, Maes, Cohn and Landry, we have applied these in our clinics to all the great arteries of the neck and to the iliacs. At present we advocate the preliminary application of these bands in all cases of aneurysms or tumors involving the innominate, carotid, subclavian and iliac arteries. If after total occlusion of the artery the peripheral circulation remains good, nothing further is done, and often the aneurysm is cured by this simple method. The band then remains permanently encysted in the tissues as a ligature. If there are evidences of a defective circulation which makes permanent cerebral disturbances probable, when the common or inter-

17. Moszkowicz: Diagnose der Arterienverschluss bei Gangrena Pedis, Mitt. a. d. Grenzgeb. d. Med. u. Chir., 1907, xvii, Nos. 1 and 2.

18. Matas, Rudolph, and Allen, C. W.: Occlusion of the Large Surgical Arteries with Removable Metallic (Aluminum) Bands, to Test the Efficiency of the Collateral Circulation, *THE JOURNAL A. M. A.*, Jan. 28, 1911, p. 233.

nal carotid is involved, or when in the limbs permanent ischemia and gangrene are threatened, especially in the lower extremities, the band is relaxed just sufficiently to restore a living color to the periphery, the vessel remaining then only partly occluded. This procedure will diminish the activity of the circulation in the aneurysm and by gradual obliteration often lead to its cure, as originally and very clearly demonstrated by Professor Halsted.

These aluminum bands as supplied by our local manufacturers¹⁹ are of standard length (6 inches) and of the same thickness (23 Brown and Sharp's metal gage). In width there are three sizes: $\frac{5}{16}$ inch (approximately 8 mm.); $\frac{1}{4}$ inch (about 6 mm.); $\frac{3}{16}$ inch (about $4\frac{1}{2}$ mm.). In practice I have found that the $\frac{5}{16}$ inch band, 23 B. & S. gage (approximately $\frac{1}{2}$ mm., or exactly 0.573 mm.) is most generally applicable and useful. This approximates closely the width and thickness of the normal superficial femoral at its origin, and of the common carotid, as given by Ballance and Edmunds²⁰ in their accurate scale of measurements. The bands are cut long enough to be used as an aneurysmal needle; they are pliable and easily bent and curved in the shape of a flat hook, which can be readily insinuated between the blood-vessel and its sheath. After the band has been carried around the circumference of the vessel, it is generally compressed by the fingers of the operator until the pulse on the distal side becomes imperceptible. The excess of band which remains is cut off with stout scissors, or preferably with small wire clippers. The bands are now supplied by the dealers, perfectly smooth, polished and rounded at the edges, ready for immediate use after sterilization. Should it become necessary to remove the band, or relax its grip so as to allow a partial circulation, on account of ischemic disturbances in the region supplied by the occluded vessel (as when cerebral disturbances occur after occlusion of the common carotid), the point of a sharp instrument or blade of knife is inserted between the approximated ends of the band, which, when slightly twisted, accomplishes the separation and releases the vessel, allowing the circulation to be restored. When no disturbances occur in the peripheral circulation, the band remains permanently embedded in the tissues, where it is encysted in a fibrous sheath. The bands are always well tolerated by the tissues and primary healing is the rule. Even when suppuration has occurred, the tissues have healed over them permanently and satisfactorily. When cerebral disturbances, or evidences of dangerous ischemia in the peripheral parts, call for a partial or total restoration of the vascular lumen, this may be safely attempted after a total occlusion of fifty-six or seventy-two hours' duration, because no permanent damage will be inflicted on the arterial wall in that time, provided the band has been applied with proper care to avoid a crushing or contusing force.

In a joint contribution with Dr. C. W. Allen, read in this section at the St. Louis session of the American

Medical Association (June, 1910), we briefly reported fifteen cases in which these bands had been applied, chiefly to the carotid and subclavian arteries, and mentioned two in detail in which cerebral symptoms developed in one immediately, and in the other several hours after the application of the band. In both instances prompt relief followed after reopening the wounds and releasing the constriction on the vessel. Since then our experience has increased considerably, and recently one case has been under observation, that of a patient suffering from a traumatic pulsating exophthalmos, on whom my associate, Dr. Gessner, had attempted relief by occlusion of the common carotid on the affected side.

In the patient, a man of 45 years, stupor and hemiplegia with loss of vision developed four hours and thirteen minutes after the occlusion of the artery. Nearly two hours after the onset of these symptoms the band was removed by Dr. Gessner without anesthesia. Following an initial convulsion the patient emerged from the stupor and regained consciousness. The next day he was well, but the pulsating exophthalmos returned. Oct. 13, 1913, the same patient returned to our clinic, seeking relief for the exophthalmos, loud intracranial noises, pulsation of facial veins, etc. By adopting a course of systematic digital compression, under our instruction the patient trained himself to tolerate by prolonged sittings an occlusion of the common carotid so successfully that in five weeks his symptoms were completely controlled without ill effects. Accordingly on Nov. 21, 1913, a second occlusive aluminum band was applied, this time with perfect success and without cerebral disturbances.

Nine months have now elapsed since the band was applied, and thus far nothing has occurred to suggest a relapse. This case, therefore, is instructive in again proving the value of a removable aluminum band as a prophylactic against fatal cerebral complications. It is also a most convincing demonstration of the efficiency of systematic compression of the common carotid as a means of developing the collateral circulation in the brain, and thereby establishing the tolerance of the common carotid to permanent occlusion; the same method applied to this patient, without such training and preparation, would have certainly failed, ending in his death if the band had not been promptly removed.

Very recently we have had an opportunity to prove the value of these bands in testing the collateral circulation in the lower extremities. These were two cases of iliofemoral aneurysm which occurred in advanced nephritic patients with marked general arteriosclerosis. The aneurysms encroached too much into the pelvis to permit of any testing by the methods of mechanical compression previously described. The aneurysms were very active and growing to such voluminous size that rupture threatened. The nephritis in both cases made a general anesthesia by any method dangerous. Furthermore, neither of these patients could have survived a radical operation under general anesthesia. In both cases local anesthesia was sufficient to expose entirely the external iliac up to its origin in the bifurcation by stripping the peritoneum. In each case a band was placed on the external iliac about an inch below the bifurcation of the common iliac and a little above the upper pole of the aneurysm. The artery was occluded completely and the effect on the peripheral circulation was carefully watched. In one case, the living color of the foot and digits returned after a marked pallor of twenty minutes duration; the pedal pulses, which were faint before the operation, remaining permanently obliterated.

19. McDermott Surgical Instrument Company, 734-738 Poydras Street, New Orleans.

20. Ballance and Edmunds: *Ligation of the Arteries in Continuity*, London, 1891. In accordance with this scale of measurements the bands for the common carotids should be 8.5 mm. in width and 0.78 mm. in thickness; for the common femoral, 10 mm. in width and 1.1 mm. in thickness; the superficial femoral, 8 mm. in width and 0.72 in thickness. We have used the bands made for the common carotid on the iliacs, femorals and subclavian with equal success and believe that they will do as well for all the large arteries, including the innominate and common iliacs. We do not recommend metallic bands for the aorta except for purely temporary purposes.

In the other patient the pailor of the extremity continued for an hour, but was finally restored by vigorous massage and hot applications. After this, the recovery in both cases was uneventful. The aneurysms collapsed, hardened and contracted, so that, when these patients were discharged, six and eight weeks, respectively, after the operation, the tumors had been reduced to one-fourth their original size. One of these patients has since died at his home in Alabama, in uremic coma, but the reports received indicate that the aneurysmal tumor had at no time troubled him after he returned home. The other patient is still living, but growing rapidly worse with his nephritis, though the aneurysm has practically disappeared and is giving him no trouble. Reports of these cases will be published in detail in a study of a group of iliac aneurysms that I have in preparation.

The use of aluminum bands as occlusive or constricting agents in the surgery of the blood-vessels, as first suggested and practiced by Prof. William Halsted,²¹ marks a distinct period in the history of vascular surgery. Our purpose and technic are different from Dr. Halsted's, but whether the aluminum straps are applied as circular bands with the ingenious band roller that Dr. Halsted devised or as flat bands which we (Matas and Allen) have found advantageous to substitute for it with the very simple technic that is here described, there can be no question that the occlusion of the large surgical arteries, with the possible exception of the aorta, is infinitely superior by the band to any of the methods of temporary occlusion hitherto described and recommended (Jordan, Doberauer, Neff, Crile, Smäler, Bordach).

I have dwelt sufficiently on these methods in previous communications²² to this section of the American Medical Association, to the American Surgical Association and last year at the International Medical Congress in London, so that it is unnecessary further to discuss the technic of these procedures, which are fully described and illustrated in my several papers, and also in those contributed by Drs. C. W. Allen,²³ H. B. Gessner,²⁴ Urban Maes²⁵ of my staff.²⁶

21. Halsted, W. S.: Partial, Progressive and Complete Occlusion of the Aorta and Other Large Arteries in the Dog, by Means of the Metal Band, *Jour. Exper. Med.*, 1909, xi, 373.

22. Matas, R.: Some of the Problems Related to the Surgery of the Vascular System; Testing the Efficiency of the Collateral Circulation as a Preliminary to the Occlusion of the Great Surgical Arteries, the president's address, American Surgical Association, May 1910, *Tr. Am. Surg. Assn.*, 1910; *Ann. Surg.*, 1911, liv, 1; Surgery of the Vascular System, in *Keen's Surgery*, v, 350 (see chapters on Aneurysm and Aneurysms of Special Arteries) Philadelphia, W. B. Saunders Company, 1909; The Suture as Applied to the Surgical Cure of Aneurysm, *Tr. Seventeenth Internat. Cong.*, London, Aug. 6-12, 1913, report, Section of Surgery.

23. Allen, C. W.: The Matas Band as a Test of the Collateral Circulation in the Circle of Willis, *South. Med. Jour.*, 1912, v, 346.

24. Gessner, H. B.: The Matas Band as a Test of the Collateral Circulation through the Circle of Willis, *South. Med. Jour.*, 1912, v, 307.

25. Maes, U.: The Matas Test for the Efficiency of the Collateral Circulation in Aneurysms of the Extremities, *South. Med. Jour.*, 1912, v, 304.

26. In addition to the references already given, the following will be of interest:

Peck, C. H.: Popliteal Aneurysm (Endo-Aneurysmorrhaphy obliterative) (tests for the collateral circulation applied and described), *Ann. Surg.*, 1911, liii, 861.

Cross, R. S.: Popliteal Aneurysm: Obliterative Endo-Aneurysmorrhaphy (tests for collateral circulation applied and described), *Australian Med. Jour.*, 1912, i, 309.

Gardner, F.: L'Endoaneurysmorraphie, *Gaz. d. hôp.*, lxxxiii, 1599.

Delbet, P., and Mocquot, P.: Affections chirurgicales des artères, *Nouveau traité de chirurgie (Le Dentu-Delbet) Paris*, 1911, xi.

Hamann, Carl A.: Ligation of the Innominate Artery, *Ann. Surg.*, June, 1914, p. 962. (Refers to G. N. Stewart's calorimetric method, *Arch. Int. Med.*, December, 1912, p. 678; also Harvey lecture for 1913).

Lejars: Les applications exploratrices de hyperémie active, *Semaine méd.*, 1914, xxxiv, No. 3.

Smäler: Zur Unterbindung der Carotis Communis, *Beitr. z. klin. Chir.*, 1913; lxxxix, 494.

Sandrock, W.: Zur Bestimmung der Ernährungsgrenze bei Gangrena Pedis, *Zentralbl. f. Chir.*, 1913, No. 27, p. 1070.

In closing this discussion on the methods of testing the collateral circulation, I would briefly state that the chief requirements for the general and successful application of these tests are:

(a) Simplicity and ease of application.

(b) Reliability in furnishing a fair and dependable information for clinical purposes.

(c) That the test may be applied with a minimum of trauma to the blood-vessels and the affected parts.

These requirements are met, I believe, by the two methods which I have suggested and have learned to rely on, after a very considerable experience. I do not hesitate to recommend them to my colleagues and fellow workers. They will also find, in the suggestions from other sources quoted in this paper, excellent material for obtaining a preoperative information on the condition of the peripheral circulation.

It is well understood that in emphasizing the importance of a preliminary knowledge of the condition of the collateral circulation, I do not pretend that it is possible in every case to apply these tests, or that, even after obtaining the desired information, we can always escape from disaster. It should be remembered that every injury of an artery, especially if diseased, no matter how trivial or insignificant it may appear to be, may lead to fatal thrombosis or embolism, though the collateral circulation may appear to be efficient, as shown by the tests. It has been my good fortune to have escaped such an occurrence in my practice; but it is easily conceivable that at any time such an accident may occur, in spite of every precaution.

Finally, all methods of investigation which furnish reliable *preoperative* information on the status of the collateral circulation are valuable.

(a) In avoiding unnecessary or possibly disastrous operations.

(b) In delaying dubious or dangerous operations, until the patient has been given better opportunities to develop the defective circulation.

(c) In shaping the course of an operation, so that a simple and comparatively inoffensive procedure may be substituted for a more complex, risky and uncertain undertaking that the tests have shown to be unnecessary.

(d) In preparing the operator himself for contingencies that may arise in the course of the operation, and that the tests may lead him to expect.

(e) In furnishing the operator with far better elements of prognosis in vascular lesions than he has ever had before, or that he could ever have without them.

Again, to learn how to gage the condition of the collateral circulation in vascular surgery, is only to emphasize the old saw, "To be warned, is to be fore-armed."

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Disease as a Disturbance of Equilibrium.—When the variation carried out by the organism leaves that organism in a renewed condition of equilibrium with its surroundings, we reckon its state to be normal or physiological; when, however, it fails to adjust itself, the term "disease" may be used. This term has also been applied, though without proper justification, to cases in which, in answer to an unusually sudden or unwonted environmental stimulus, the organism has been called on to put forth greater efforts than usual. Thus, when the body is invaded by micro-organisms to which it has not been accustomed, the result usually is a more or less powerful reaction (inflammation, etc.) on its part.—Arthur J. Brock, *Edinburgh Med. Jour.*

ANEURYSM OF THE POSTERIOR TIBIAL
ARTERY

WITH REPORT OF TWO CASES*

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The method of direct suture for the repair of wounded vessels was applied to the treatment of aneurysm very soon after its discovery. Later, principally through the work of Carrel on vessel transplantation, another impetus was given to this study. An ideal method, therefore, has been developed for the treatment of aneurysms which has for its object the removal of the defect in the vessel and the provision of a new channel through which the blood may flow over its original course.

The ideal method aims at success without the assistance of a collateral circulation. In cases in which the collaterals are well developed, the ideal operations put a needless burden on both patient and surgeon, because not only are they difficult to perform but also they frequently fail on account of the generally diseased

disadvantage in permitting recurrence through refilling of the sac.

The contributions of Monod and Vanverts¹ summarize in an excellent manner the general results of the various forms of treating aneurysms. Since their publication the best articles relating to the subject have been detailed reports of operations on particular vessels, for example, Halsted² on the common iliac artery, and Elliott³ on the subclavian artery.

Reports of aneurysm of the posterior tibial artery are rare. I have found only nine cases in the literature since 1894, and there are no specimens of this aneurysm mentioned in Lamb's⁴ catalog with reference to the Army Museum. For this reason I am reporting the two cases that were admitted to my service at the Mercy Hospital, Baltimore, during the summer of 1913. In the first case I performed the operation of obliterative aneurysmorrhaphy, while in the second, my associate, Dr. E. H. Hutchins, excised the aneurysm. The similarity of position and general character of the aneurysms gave an excellent opportunity for comparing the results in the two forms of treatment.

Reporter	Place Reported	Age of Patient	Duration	Etiology	Type	Operation	General Vascular Condition	Result
P. Penquiez	<i>Gaz. méd. de Picardie</i> , 1900, xviii, 21.	62	—	Spontaneous	Saniform	Excision	Sclerosis	Immediate cure
Leuger	<i>Bull. Acad. de méd. belge</i> , 1903, xvii, 1006.	27	4 years	Traumatic	Not given	Excision	Healthy	Cure; 3 years' observation
Bobbio	<i>Gior. d. r. Accad. di Med. di Torino</i> , 1903, lxvi, 545.	36	—	Spontaneous	Not given	Excision	Not given	Immediate cure
Saigo	<i>Deutsch. Ztschr. f. Chir.</i> , 1906, lxxxv, 577.	33	4 months	Traumatic	Not given	Excision	Not given	Immediate cure
Ochmann	<i>Vratch</i> , 1908, p. 1350	—	—	Traumatic	Not given	Excision	Not given	Immediate cure
Viaunay	<i>Loire méd.</i> , 1909, xxviii	21	6 months	Traumatic	Not given	Excision	Not given	Immediate cure
Houzel	<i>Rev. de Chir.</i> , 1910, xlii, 431	60	2 years	Spontaneous	Not given	Excision	Atheromatous	Immediate cure
Perkins	<i>New Orleans Med. and Surg. Jour.</i> , 1909, lxi, 810	40	4 months	Traumatic	Saniform	Obliterative Aneurysmorrhaphy	Good	Immediate cure
Primrose	<i>Canadian Med. Assn. Jour.</i> , July, 1913.	44	4 months +	Spontaneous	Fusiform	Obliterative Aneurysmorrhaphy	Marked sclerosis	Cure; death three mos., uremia
McGlannan	Present Report	55	14 months	Spontaneous	Fusiform	Obliterative Aneurysmorrhaphy	Sclerosis	Cure, senile gangrene 6 months
McGlannan	Present Report	45	1 year	Traumatic	Fusiform	Excision	Healthy	Immediate cure, with edema of foot and leg

condition of the vessel involved. Such failures, due principally to embolism or hemorrhage, jeopardize the limb, often demanding amputation on account of gangrene. When the collateral circulation has not been established the ideal operation becomes more dangerous for the patient, especially if the vessels are sclerosed. The risk of ligation in such cases is well known, and it is here that the endo-aneurysmorrhaphy of Matas or the bands of Halsted are of greatest value. These methods diminish the flow of blood through the aneurysm, and provide for its gradual occlusion, during which time an adequate collateral circulation may develop. The great superiority of the bands over other forms of occlusion lies in the slight disturbance of the vessel incident to their application.

These considerations apply most forcibly to aneurysms of the larger vessels. For smaller vessels the choice of treatment is between ligation, on the one hand, and excision or obliteration, on the other.

Although the probabilities of gangrene are nearly equal in either form of treatment, ligation has a great

CASE 1 (Surg. 81064).—Aneurysm posterior tibial artery, upper portion, ruptured. Endo-aneurysmorrhaphy obliterative. Cure.

Colored man, aged 55, truck-driver. Referred by Dr. Stiefel, Baltimore. Duration of disease, fourteen months. Symptom of onset, pain in the leg increased by motion of knee. Ten days before admission sudden sharp pain occurred after violent flexion of the knee and patient noticed the development of a large swelling in the right calf.

On admission, the mass in the right leg extended from the lower portion of the popliteal space to about the middle of the calf. There was a prominent bulging just below the head of the fibula (Fig. 1). The swelling was tense and firm, the skin shiny and the superficial veins distended. No pulsation could be felt in the artery at the malleolus, or in the dorsalis pedis. The foot was slightly edematous, but was warm and the circulation in the toes seemed good. There was loss of plantar flexion in the great toe, but no disturbance of sensation. The general cardiovascular condition of the patient was poor. The heart was hypertrophied and the seat of double mitral murmurs, with a general arteriosclerosis. Blood-pressure 185. The urine contained albumin

1. Monod and Vanverts: *Rev. de chir.*, 1910, 1911, xli-xliv.
2. Halsted: *Bull. Johns Hopkins Hosp.*, 1912, xxiii, 2.
3. Elliott: *Ann. Surg.*, 1912, lvi, 83.
4. Lamb: *Mil. Surgeon*, February, 1911.

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

and granular casts. Wassermann reaction negative. Roentgen-ray examination negative.

Operation.—June 20, 1913, the patient was given $\frac{1}{4}$ grain of morphin hypodermically and placed on the table in the prone position. Iodin disinfection was used for the skin and a tourniquet applied in the upper third of the thigh. With novocain infiltration, an incision was made extending from the upper portion of the popliteal space down the middle line of the back of the leg to its lower third. The thinned-out gastrocnemius and soleus muscles were divided, the clots wiped out of the wound and the ruptured aneurysmal sac exposed. The sac was fusiform, about 12 cm. long with a wound extending about 5 cm. in its upper portion. The dilatation began just below the point of divergence of the peroneal artery. The nerve was pushed to the inner side and the tibialis posticus and flexor longus pollicis muscles were almost entirely destroyed by pressure. The rough edge of the tibia with several small exostoses was felt through a thin membrane in the depths of the wound, just anterior to the aneurysm.

The sac was opened throughout its length and the upper and lower openings of the artery sutured with fine silk from within. No other vessels opened into it. The sac was next obliterated by several layers of catgut sutures, the muscles united and the wound closed without drainage.

Convalescence was uneventful, except for a hematoma in the wound which required evacuation on the tenth day. The circulation in the foot was always good and the edema disappeared at once. There were no symptoms of nerve disturbance, but there was loss of power in plantar flexion of the great toe, easily explained by the destruction of muscle observed at the operation.

In December, 1913, six months after the operation, this patient returned for treatment on account of numbness in the great toe. Dry gangrene soon developed and extended until all the toes were involved. These were removed one at a time as the line of demarcation appeared, but later the process extended, especially over the dorsum of the foot. At the present time this patient has a granulating stump, the lower ends of all the metatarsals having been removed. The granulations are healthy, the circulation is good and it is likely that no further extension will occur.

On account of the general arteriosclerosis, I feel that this gangrene, coming on six months after the operation, cannot be charged against the value of the procedure, nor considered a sequel of the aneurysm, but should be looked on as a natural development of his previously existing arterial disease.

CASE 2 (Surg. 85019).—Aneurysm posterior tibial artery, upper portion, ruptured. Excision. Cure.

Colored man, aged 45, stevedore. Referred by Dr. G. F. Chambers, Lusby, Md. Duration one year. Symptom of onset, pain and swelling after a slight injury, followed later by visible and

palpable pulsation of the swelling. A short time previous to admission the patient noticed rapid increase of the swelling and a disappearance of the pulsations. The leg became heavy and painful and interfered with walking.

On admission the leg was so greatly swollen from 4 inches above the knee to the tip of the toes that all anatomic landmarks were obliterated. The skin was shiny and stretched over the firm swelling. No pulsation was felt in the tumor or in the region of the arteries at the ankle. No disturbance of sensation over the foot and leg.

The general condition of the patient was good. No arteriosclerosis, or disease of the heart or kidneys. Roentgen-ray examination negative. Wassermann reaction negative.

Operation.—Aug. 26, 1913. Ether anesthesia. Iodin disinfection. Tourniquet placed about middle of thigh. A long incision made over the swelling in the midline of posterior portion of the leg. Calf-muscles divided, opening into a cavity, extending from knee to ankle, filled with blood-clot. After the clot was cleaned out, the fusiform aneurysm was exposed, situated at the upper portion of the posterior artery. The sac had ruptured, and the extravasated blood hollowed out an immense cavity in the leg-muscles, across which the vessel extended like a stretched cable. The aneurysm was excised and after ligation of several vessels the wound closed with drainage.

The convalescence was uneventful, the wound healing without any complications. Edema of the foot and leg was marked and persistent. Eight weeks after the operation, in spite of rest with elevation of the limb, and bandaging, the circumference of the calf of the injured side was 6 cm. and of the foot 5 cm. greater than that of its fellow.

This edema very slowly diminished and finally disappeared. A late report from the patient states that he is able to do his work as before the injury.

These two cases offer an excellent opportunity for comparison between the relative advantages of endo-aneurysmorrhaphy and of excision in the treatment of aneurysms of the peripheral vessels.

1. Ease of execution. The intersaccular suture was done rapidly and comfortably without any disturbance to the surrounding tissues. The ease with which the veins and nerves were avoided was noticeable. The excision, on the other hand, required greater dexterity and much more disturbance of the veins in the control of hemorrhage. Regarded from the point of view of the operator, the Matas operation is, therefore, preferable, because of its easier performance.

2. The immediate result of the operation. The edema of the leg and foot following excision and its entire absence after the Matas operation is the most striking feature

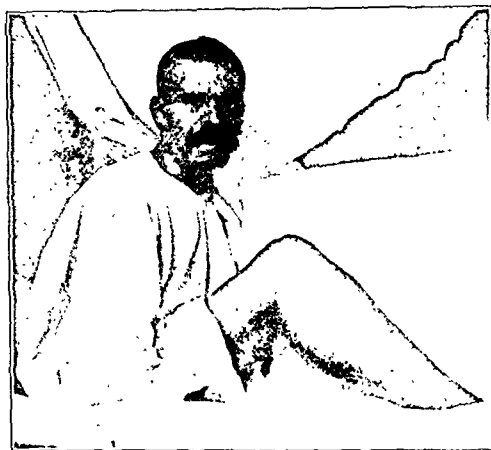


Fig. 1.—Aneurysm of posterior tibial artery (Case 1). Photograph of patient before operation.

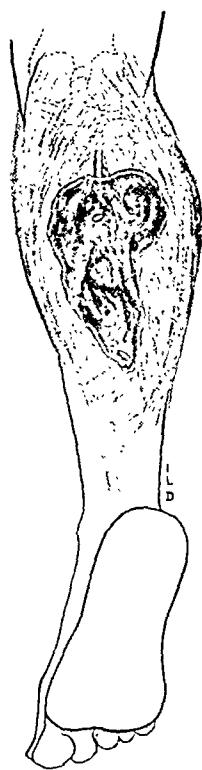


Fig. 2.—Aneurysm of posterior tibial artery (Case 1). Sketch showing appearance of sac after removal of clot.

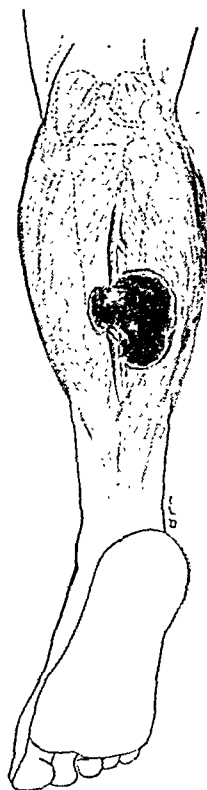


Fig. 3.—Aneurysm of posterior tibial artery (Case 1). Sketch showing sac and vessel extending across the cavity excavated by the clot.

of the immediate result in these cases. The persistent edema interfered to a marked degree with the function of the limb, and gave the patient a good deal of discomfort.

The cause of the edema is not easily explained. It is possible that the preservation of the vessel in the Matas operation also preserves an important portion of the route of lymphatic return from the foot and in this way prevents the development of edema.

3. The ultimate result. I have already given my reasons for concluding that the gangrene of the foot, occurring in the first patient, was not attributable to the aneurysm or its treatment. Disregarding this factor then, the end-result in both cases is the same. The aneurysm is cured without sacrifice of the leg or its function. Therefore, in the ease of execution and in the greater immediate comfort of the patient lie the advantages of endo-aneurysmorrhaphy.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DRs. MATAS AND MCGLENNAN

DR. B. M. BERNHEIM, Baltimore: I would emphasize the necessity not only of having a collateral circulation in these vascular conditions, but also of finding out how extensive it is. The reason these tests are not more generally known and practiced is because, for the general surgeon, they are really too involved; they are too difficult to interpret, and, finally, even when used carefully and when a real attempt is made to interpret them properly, they are not entirely conclusive. The great variety and number of the tests, as brought out by Dr. Matas, are an evidence of this. In the abdomen and around the great trunks of the neck I believe it is best to apply the preliminary band according to Dr. Matas' directions and to operate accordingly. That is, if, after the band has been on for a sufficient length of time there is threatened gangrene of the affected extremity, the band had better be removed and some method other than extirpation or ligation had better be attempted. Concerning Matas' method of occluding the vessels of the extremities, I mean occlusion of the femoral artery to determine the condition of the circulation of the leg, Dr. Matas mentioned that he had tried this test a number of times. I did not hear him say whether he thought there was any danger in this test. If he had any bad results I am sure he would have mentioned them. In my vascular work I have always felt it a mistake to put any great pressure on the femoral or axillary artery when there was any considerable vascular disturbance far below it, because it seems possible to injure the sclerotic vessel by dislodging a chance thrombus. I have now operated on a great many patients in these so-called angiosclerotic conditions with threatened gangrene of the leg, and these vessels are very liable to be injured. Therefore I do not make use of any test other than to use digital pressure. To put on pressure with any instrument is a mistake. For practical purposes the pulse-test is the most satisfactory, especially for the surgeon who has a casual blood-vessel case. It is my routine in these cases, for instance in the leg, to start first at the groin, find out whether there is a femoral pulse and if so trace it downward not only digitally, but with the stethoscope, and then examine for the popliteal pulse. To be sure that it is present is rather simple, but it is not so easy to know when it is absent. After finding or not finding a popliteal pulse I then attempt to find the dorsalis pedis artery. If the pulsation can be felt in the foot, in the popliteal space and in the groin, one may be sure that the circulation of the leg is in pretty good shape. If there is no dorsalis pedis pulse, or pulse in the popliteal space, one had better consider carefully what operation to attempt. I believe, as does Dr. McGleNNan, that there have been many ill-advised attempts to suture arteries, but I also believe there have

been ill-advised attempts to do an endo-aneurysmorrhaphy and that, unless the younger and older generations of surgeons attempt to become proficient in blood-vessel surgery, there is little hope for vascular surgery in the future. I deprecate the practice of vascular surgery on human beings by any man before he attempts this work in the laboratory, but every young surgeon should go into the laboratory and make himself proficient in the handling of the blood-vessel suture. These sutures are now on the market. A manufacturing house is putting up a package with blood-vessel needle and suture already threaded, in a liquid vaseline, so that there can be now no excuse for a man not being prepared to do any blood-vessel operation that might come up. When there is pain in the extremity in circulatory disorders, one had best be careful, because pain, especially in these angiosclerotic conditions, is an indication that the circulation is not what it ought to be; it is due to an ischemia. Therefore, whether or not due to an aneurysm, my advice would be that, when every means at his disposal have been employed to discover the condition of the collateral circulation, if the surgeon is in doubt, he will be favoring his patient most if he will do a blood-vessel suture rather than a ligation or an extirpation. With a developed collateral circulation, Dr. Matas' operation of endo-aneurysmorrhaphy is the method of choice.

DR. A. PRIMROSE, Toronto, Can.: I reported, in conjunction with Dr. T. D. Archibald, a somewhat similar case some time ago. (Primrose and Archibald: Aneurism of the Posterior Tibial Artery: Rupture of the Sac: Operation by the Matas Method, *Canadian Med. Jour.*, July, 1913. The patient was a man aged 43 who first came under treatment in July, 1911, for nephritis and arteriosclerosis with slight cardiac hypertrophy. The urine contained hyaline and granular casts with 2.8 per cent. of albumin. Feb. 8, 1912, rupture of an aneurysm occurred in the calf of the right leg. In April, 1912, he suffered from a peculiar numbness of the left side of the face accompanied by thickness of speech, which persisted. The patient had been an alcoholic. He had marked exophthalmos. The blood-pressure range was from 100 to 220 mm. Hg. The tumor in the calf of the right leg was firm and did not pulsate as a whole. There was a well-marked bruit over it which was systolic, loud, rough and blowing, with a remarkable musical note. June 15, 1912, an operation was performed. An adherent laminated clot was found which was about the size of a hen's egg. Beyond this a large cavity containing a very dark, almost black, blood-clot, lay beneath the soleus and had the deeper muscles of the calf in its floor. The clot was removed and the cavity washed out with hot saline solution. A ruptured aneurysmal sac was found with two openings on its posterior surface. The ruptured sac was closed by Matas' method. No. 1 chromic catgut was used for the purpose, the obliterative form of suture being employed. The blood-pressure during the operation went up to 260 mm. Hg. Subsequent to the operation the blood-pressure remained from 170 to 180 mm. Hg. The albumin in the urine diminished to $\frac{1}{3}$ per cent. The patient's speech was almost normal and he appeared remarkably well. Ten weeks subsequently he contracted pneumonia and died—about three months after operation. Our patient was severely handicapped for operative procedure by reason of the existence of nephritis with the arteriosclerosis and an unusually high blood-pressure. In this respect in the case reported the history is almost identical with that first referred to in Dr. McGleNNan's paper, and both of these possess a history in marked contrast with that in Dr. McGleNNan's second case in which there was no arteriosclerosis and no kidney disease. In all three cases the aneurysm had ruptured before operation. I can add my testimony to that of Dr. McGleNNan concerning the ease and comfort with which the Matas operation can be performed, and to the efficiency of this method of treatment. I think he is hardly justified in instituting a comparison between the results obtained in the two cases he reports, because the factor of serious kidney disease with marked arteriosclerosis in his first patient was a serious handicap which was not present

in the second. Had excision of the aneurysm been attempted in the first case (or in my case) the operation would have been rendered the more difficult and dangerous, not only because of the difficulty in controlling hemorrhage which would have been encountered in the presence of such marked sclerosis of vessels, but also the greater amount of interference with veins and other vessels in the operation of excision would have had still greater effect than in dealing with diseased vessels. In all probability, the subsequent edema would have been still more troublesome if, indeed, the vitality of the limb had not been endangered. The Matas operation, therefore, seems the ideal one in such cases. The term "laminated clot" is misleading when used to describe the contents of such an aneurysm. We associate the term "clot" with the formation and deposition of fibrin in which are entangled red cells and some leukocytes, unless the former be washed out to permit of a "colorless clot." On microscopic examination, however, of the so-called "laminated clot," we find, in many places, an almost complete absence of fibrin; there is, instead, a solid mass of blood platelets interspersed with leukocytes. In certain parts, fibrin (usually in strands) may be found interspersed with red and white cells. The fate of all may be "organization" and replacement by fibrous tissue. It is apparent that organization is largely if not solely accomplished by the proliferation of the endothelial cells of the intima-forming fibroblasts, with the ingrowth of capillary loops. This eventually, in favorable cases, proceeds to complete obliteration of the cavity by fibrosis. On the other hand, the ultimate fate of a mass of platelets may in part be to undergo autolysis or absorption. Blood stagnant in a vessel, for example, after ligation, will clot; fibrin forms and this subsequently organizes. In an aneurysm a thrombus occurs, formed, primarily, largely of blood platelets with a variable amount of fibrin, and certain alternation of these elements may occur to produce a laminated effect. These facts are important in considering the result of the Matas method of operating. Here the blood-flow, which is essential for the deposition of platelets, is completely cut off, a small amount of blood-clot may form and fibrin be deposited, but the endothelial surfaces are approximated and by proliferation of the cells of the intima, fibroblasts appear which lead to fibrous-tissue formation and thus complete obliteration occurs by a process of fibrosis. The results thus attained are ideal.

DR. JOHN W. PRICE, JR., Louisville, Ky.: The ideal procedure for operation in cases of aneurysm of the traumatic type, or as a result of arteriosclerosis has been put in bad repute by men of bad judgment, by men who have attempted to make an anastomosis between a venous graft and the end of an artery with such a high grade of endarteritis that the circulation of the artery wall itself was not good, so that there was no hope for the anastomosis to take. By the proper selection of cases, especially those of traumatic aneurysm in young men when the endothelium is in good condition, our hope for doing the ideal operation is very good. The failure in such a case is the fault of the operator and not of the operation. The obliteration which occurs at the site of the anastomosis of the venous graft to the artery is due to the formation of thrombi. The formation of thrombi is the result of the failure accurately to approximate the endothelial surfaces of the graft and of the artery. We have overcome this difficulty by the use of a very simple instrument which we have used in our experimental work, which we call a cannula forceps. It is simply a cannula which has been divided longitudinally into halves, each half soldered to the tip of a blade of a mosquito forceps. When the forceps is closed our cannula is complete and when open we can put it around the artery, turn a cuff of the artery back over our closed cannula, then bring the end of the venous graft over the cuff of the artery so that we have endothelium next to endothelium. The ends of the vessels are held in position by little hooks attached to the shaft of our instrument. We apply a continuous basting-stitch suture around and around, with our cannula as a firm base to work on. When the suture is completed one simply

slips the cannula out of this cuff. What is obtained? An approximation of endothelium to endothelium, the basting stitch going from outside to inside of the venous graft, and from inside to outside of the artery. There is a minimum chance for the formation of thrombi. The simplicity of this procedure appealed to me and I have suggested it because many men, who have neither the time nor a laboratory in which to do an immense number of blood-vessel anastomoses, can use this cannula-forceps. With it 99 per cent. of skillful abdominal surgeons will be able to make anastomoses the first time. The first one I performed with a medical student in five minutes. There was no skill on either side. I had no special experience. I had tried the Carrel method and had failed.

DR. J. SHELTON HORSLEY, Richmond, Va.: Dr. Matas' contributions to the therapeutics of aneurysm are important. He shows that there is no single treatment for aneurysm. Differing aneurysms and varying conditions require different treatments. The only genuine "ideal operation" for aneurysm is that which cures the patient with the greatest safety. The so-called ideal of restoring circulation by excising the aneurysm and suturing on a piece of vein to reestablish the circulation may sometimes fulfil this, but not always. According to the tests described by Matas, if the collateral circulation is fairly good in the extremities the operation of endo-aneurysmorrhaphy is the ideal treatment. If, however, the circulation is quite poor, if there is already evidence of defective circulation too great to permit the use even of the constriction band, endo-aneurysmorrhaphy will not be indicated. Therefore, the so-called ideal operation of excision and substituting a piece of saphenous vein would be proper. Those who have had any experience with operation on aneurysms of the high femoral know that it is often difficult and bloody. The only way in which the circulation can be completely controlled is by pressure on the aorta. These cases can be sometimes treated by clamping the artery at both ends of the aneurysm and gradually excising the sac with the substitution of a portion of the saphenous vein. Lexer reports a case in which he did this. The patient was perfectly well six months later. Arterial suturing requires some experimental work before it should be used clinically. In the beginning of intestinal surgery there were numerous bobbins, buttons, etc., used. Now everyone uses needle and thread. In blood-vessel work the same process of evolution will take place. The advantage of everting intima and applying a broad surface of endothelium to endothelium is obvious. Lexer used the running stitch of Carrel and it pulled out and he then used the mattress stitch. Now a single mattress stitch, certainly in experimental work, is sometimes dangerous, for secondary hemorrhage sometimes occurs. It complies with the conditions of approximating broadly by everting endothelium but leaves a weak point between the stitches. In intestinal surgery, endothelial surface is on the outside and one turns a flange in; in blood-vessels, endothelium is on the inside and one turns a flange out. You would not think of doing intestinal surgery by whipping the edges together with an overhand stitch as in suturing skin. I have adopted the double mattress or cobbler's stitch, which fulfils all these conditions and leaves no weak point and I have never had secondary hemorrhage since using it. Experimentally, I have excised a portion of the abdominal aorta and sutured into the defect a rubber tube and the dog made a perfect recovery. I have done it seven times and had only one perfect recovery. In this case the dog was killed six months afterward, and the specimen removed. There had been no paralysis of the hind legs. The tube was occluded, but it had become occluded gradually so that the collateral circulation had time to form, and clinically the result was as good as if the tube were patent. As the mortality of ligation of the aorta is 100 per cent., this method might be considered.

DR. RUDOLPH MATAS, New Orleans: With regard to Dr. Bernheim's comments, it does not follow that because a considerable number of suggestions have been offered for testing the collateral circulation that all these are difficult or

fallacious. Some discretion and judgment must be exercised in applying the tests according to circumstances and, especially, the regions involved. We have been testing the circulation in our clinics since 1907 in every case in which the obliteration of the parent artery of the region might be required in the course of an operation on the neck or extremities. Thus far we have not met a case in which the simple methods that we have devised have failed to interpret the circulatory conditions. We have been so much encouraged by our results that we cannot understand how any one who is acquainted with these procedures would fail to avail himself of the very valuable information that they furnish, before undertaking an operation involving the great vascular trunks. Dr. Bernheim laid stress on the test by the pulses. So far as my experience is concerned, the absence of the peripheral pulses as an evidence of deficient collateral circulation is most fallacious. There is a general impression that in popliteal aneurysms, for example, when the pedal pulses are absent, the collateral circulation must be insufficient and an operation dangerous to the limb. This is an error which was very clearly pointed out, years ago, by Delbet. As long as the limb is not choked up, edematous, cold and cyanotic, and there is a good living color, the absence of the dorsalis pedis and posterior tibial pulses simply means that the main trunks are obstructed but that there is an adequate collateral supply. Were it not so, the foot would not be living, sensitive and otherwise normal. Furthermore, the loss of the peripheral pulses is a matter of very frequent occurrence in aneurysms of the extremities, and may exist for months and years, without any appreciable effect on the nutrition of the distal parts. In such cases one should not hesitate to operate, as the collateral circulation is assured. Concerning the fear expressed by Dr. Bernheim with regard to the dangers of arterial compression, I fully appreciate his caution, but do not believe he has obviated the risks by substituting digital for well-padded instrumental compression. The history of the old and supposedly most innocent method of curing aneurysm by digital compression is too well stocked with lamentable failures in which gangrene followed thrombosis or the displacement of emboli to warrant any statement of security by this procedure. As a matter of fact, an old atheromatous and calcareous artery can be subjected to no manipulation which does not involve some risk. In dealing with the surgical diseases of the blood-vessels this risk is always present. Even in dealing with normal arteries it is never absolutely avoidable. Embolism and thrombosis are the bane of vascular surgery. In the cure of aneurysm the methods which only temporarily or partially arrest the circulation in the sac, are especially to be feared from this cause. The intrasaccular method, by avoiding the direct manipulation of the blood-vessels and by getting rid of the clot, undoubtedly diminishes the risk of emboli displaced from the sac. The results of our methods must always be comparative. Any one who quotes the statistics of any method of treating aneurysm without mortality or without accidents of any sort, only proves that his experience is very small indeed. What we are trying to do is to cure the greatest number with a minimum risk of life or limb. In accomplishing this, we believe that a great measure of our success has been due to the care and attention that we have given to the study of the circulation, and especially the collateral circulation, as a prerequisite to operation, in each case.

DR. ALEXIUS McGLANNAN, Baltimore: The rule of Delbet cheered us in both of our cases. In both we had a well-nourished foot although the ordinary points of pulsation were absent. We excised the second aneurysm, although we hoped to do an endo-aneurysmorrhaphy. The excision was done because, as was stated in reporting the case, the vessel reached across a cavity as a cable would across an open space in the air, and the oblitative operation would have interfered with healing and therefore the excision was done. The result of the Matas operation was as nearly perfect as one could hope for in dealing with a damaged circulatory apparatus.

MYOSITIS OSSIFICANS FOLLOWING A SINGLE TRAUMA*

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The occurrence of true bone in muscle has always held something of mystery, and even at the present time there is no generally accepted belief as to its method of origin.

Although comparatively rare, more than five hundred cases, each the result of a single trauma, have been reported in the literature. Up to 1907, Strauss¹ was able to collect reports of only 150 cases.

The malady results from a severe traumatism such as the kick of a horse, a blow from a sharp-cornered object, or dislocation of the elbow, without break in the skin or subsequent suppuration. Nearly all cases occur in the brachialis anticus or the quadriceps extensor, rarely in other muscles. It is found most commonly in vigorous middle-aged men. Porter and Quinby² state that it is most commonly a result of posterior dislocation of the elbow. Machol³ records sixteen cases following immediate reposition of uncomplicated posterior elbow dislocation and says that more than one-half of the cases at the elbow follow this injury. Frangenheim⁴ states that aside from this variety of dislocation, it has been known to occur but once in the subclavius following clavicle dislocation, and once in the subscapularis following humerus dislocation. Schultz⁵ collected 233 cases from records in the German army during ten years, and in all but three the new bone was in either the quadriceps extensor or brachialis anticus muscles.

The essential character of the process is the formation of typical spongy bone intimately incorporated in the muscle. At an early stage it is cartilaginous, varying greatly in extent and shape. In the arm it may involve the origin, middle or entire brachialis anticus muscle and often the periarticular structures. The most typical growth is a somewhat tapering piece of bone in the brachialis anticus attached by a narrow stem to the tip of the coronoid process of the ulna. But as a rule, the new bone is not firmly attached to the humerus or ulna. Of fifty-six cases at the elbow collected by Cahier,⁶ in twenty-six it was entirely movable, four pedicled, sixteen attached to the capsule, and one at first movable but later fixed.

In the thigh the formation is, as a rule, attached to the femur and has to be chiseled off. All cases are said to have attachment to the bone at some time during development, in the nature of a small pedicle, the remainder of the shaft having a smooth outline. The mass may be rounded, elongated, with irregular tongue-like projections, fan-like or coral-like, as in a case reported by Gruber.⁷ At times there is a shell of bone containing old blood-clot, and in other cases cysts with bony walls. The size varies greatly, Gruber recording a mass in the vastus externus measuring 17 by 7 by 4 cm.

* Read before the Chicago Medical Society, June 10, 1914.

1. Strauss: Beitr. z. klin. Chir., 1913, lxxxviii, 740.
2. Porter and Quinby, in Bryant and Buck: System of Surgery, vii, 38.
3. Machol: Beitr. z. klin. Chir., lvi, No. 3, p. 581.
4. Frangenheim: Arch. f. klin. Chir., 1906, lxxx, 445.
5. Schultz: Deutsch. mil.-ärztl. Ztschr., 1910, No. 4.
6. Cahier: Rev. de chir., 1904, xxix, 356; 602; 768; 827.
7. Gruber: Mitt. a. d. Grenzgeb. d. Med. u. Chir., 1914, xxvii, No. 4.

Microscopically, at an early stage, there is present at the outer margin of the growth, degenerated muscle with some blood-pigment and red cells, and young connective tissue with new blood-vessels. Adjoining this is the osteoid tissue with newly formed bony trabeculae and marrow, and scattered here and there areas of cartilage. Careful histologic examination has in several cases shown a break in the outer periosteal layers, allowing the growth of bone to extend through into the soft tissues. At a late stage of the process, sections show typical cancellous bone with fibrous tissue and muscle about the outer margins.

Following a severe trauma to the anterior surface of the arm or thigh there is pain, marked swelling and discoloration, and complete disability for a few days. A roentgenogram at this time shows no fracture. Usually after a few days' rest, the patient resorts to massage and motion and in ten to fourteen days an increasing stiffness and disability is noted. A firm lump may then be felt at the seat of injury without the usual signs of inflammatory reaction. The lump continues to increase in size, and in three to four weeks the disability becomes complete. Examination shows a firm mass in the muscle, usually somewhat movable on the bone. Roentgenoscopy reveals a distinct shadow in the muscle attached at one part, as a rule, to the shaft of the bone.

During the next three or four months the mass remains stationary in size, slowly becoming harder. A gradual decrease then ensues, but the growth, as a rule, persists for several years. Makins⁸ recorded two cases which, six years after the onset, showed almost complete resorption of the new bone. Machol³ studied sixteen cases with the Roentgen ray and was able to show a period of growth terminating in mature cancellous bone, followed by a stage of gradual decrease in size and increase in density. Usually the restoration of function is complete or nearly so after four months. The only complication noted has been the limitation of motion—never any disturbance from pressure on nerves or blood-vessels.

A diagnosis is made on the finding of a firm mass at the seat of a severe trauma received about three or four weeks previously, which on Roentgen-ray examination shows a shadow in the muscle without fracture of the bone. It must be differentiated from sarcoma, for which it has been most frequently mistaken, as instanced by numerous cases in the litera-

ture. Coley⁹ called attention to the difficulty of differentiation at times. Rapid initial growth followed by quiescence and decrease, loss of function, outline of shaft sharp, early pain and hardness, all speak against sarcoma. Incision and microscopic section readily decide the question.

The prognosis is intimately related to treatment. A majority of writers on the subject state that a favorable outcome is to be expected if let alone, and that disability is more marked in those cases near a joint in which the periarticular tissues are involved in the ossifying process. Many believe that prophylaxis is important and advise immobilization for three weeks following an elbow dislocation or a severe blow on the thigh, with later gentle massage and passive motion. After the onset, therapy has no influence.

The opinion is unanimous that no operative procedure should be undertaken during the active stage, that is, before three or four months have elapsed. Removal before this regularly results in recurrence. The growth should be removed only when an indication, such as marked disability, is present. König¹⁰ declares against operation and quotes Donnah, who concluded from analysis of a series of operated cases that operation does more harm than good. Machol,³ who reported the largest number of personally studied cases, never found it necessary to operate. Lapointe,¹¹ on the other hand, thinks that excision in from six to eight weeks is the method of choice in cases not complicated by formation of bone in the periarticular structures. Coley and Lapointe believe that cases situated near a joint for this reason give worse results than those along the diaphysis. Chabrol¹² collected the end-results

in ninety-five operated cases, seventy-seven of which showed complete restoration of function, improvement in fifteen, and no improvement in three.

If operation becomes necessary, the entire mass with covering of fibrous tissue, periosteum and superficial layer of bone should be removed. Morley¹³ advocates excision with restoration of the periosteal defect with a fascial graft.

The principal interest in so-called myositis ossificans following a single trauma attaches to its genesis. The numerous theories formerly brought forth have been largely discarded by more recent workers, and at



Fig. 1.—Two weeks after injury (Case 1, July 22, 1913).



Fig. 2.—Four months after injury (Case 1, Nov. 10, 1913).

8. Makins, G. H.: Traumatic Myositis Ossificans, Proc. Roy. Soc. Med., Surg. Sec., 1910-11, iv, 134.

9. Coley: Myositis Ossificans Traumatica, Ann. Surg., lvii, No. 3, p. 305.

10. König: Arch. f. klin. Chir., 1906, lxxx, 64.

11. Lapointe: Rev. de chir., 1912, xlvii, 657.

12. Chabrol: Thèse de Paris, July, 1912; cited by Coley.

13. Morley: Brit. Med. Jour., 1913, ii, 1475.

fallacious. Some discretion and judgment must be exercised in applying the tests according to circumstances and, especially, the regions involved. We have been testing the circulation in our clinics since 1907 in every case in which the obliteration of the parent artery of the region might be required in the course of an operation on the neck or extremities. Thus far we have not met a case in which the simple methods that we have devised have failed to interpret the circulatory conditions. We have been so much encouraged by our results that we cannot understand how any one who is acquainted with these procedures would fail to avail himself of the very valuable information that they furnish, before undertaking an operation involving the great vascular trunks. Dr. Bernheim laid stress on the test by the pulses. So far as my experience is concerned, the absence of the peripheral pulses as an evidence of deficient collateral circulation is most fallacious. There is a general impression that in popliteal aneurysms, for example, when the pedal pulses are absent, the collateral circulation must be insufficient and an operation dangerous to the limb. This is an error which was very clearly pointed out, years ago, by Delbet. As long as the limb is not choked up, edematous, cold and cyanotic, and there is a good living color, the absence of the dorsalis pedis and posterior tibial pulses simply means that the main trunks are obstructed but that there is an adequate collateral supply. Were it not so, the foot would not be living, sensitive and otherwise normal. Furthermore, the loss of the peripheral pulses is a matter of very frequent occurrence in aneurysms of the extremities, and may exist for months and years, without any appreciable effect on the nutrition of the distal parts. In such cases one should not hesitate to operate, as the collateral circulation is assured. Concerning the fear expressed by Dr. Bernheim with regard to the dangers of arterial compression, I fully appreciate his caution, but do not believe he has obviated the risks by substituting digital for well-padded instrumental compression. The history of the old and supposedly most innocent method of curing aneurysm by digital compression is too well stocked with lamentable failures in which gangrene followed thrombosis or the displacement of emboli to warrant any statement of security by this procedure. As a matter of fact, an old atheromatous and calcareous artery can be subjected to no manipulation which does not involve some risk. In dealing with the surgical diseases of the blood-vessels this risk is always present. Even in dealing with normal arteries it is never absolutely avoidable. Embolism and thrombosis are the bane of vascular surgery. In the cure of aneurysm the methods which only temporarily or partially arrest the circulation in the sac, are especially to be feared from this cause. The intrasaccular method, by avoiding the direct manipulation of the blood-vessels and by getting rid of the clot, undoubtedly diminishes the risk of emboli displaced from the sac. The results of our methods must always be comparative. Any one who quotes the statistics of any method of treating aneurysm without mortality or without accidents of any sort, only proves that his experience is very small indeed. What we are trying to do is to cure the greatest number with a minimum risk of life or limb. In accomplishing this, we believe that a great measure of our success has been due to the care and attention that we have given to the study of the circulation, and especially the collateral circulation, as a prerequisite to operation, in each case.

DR. ALEXIUS MCGLENNAN, Baltimore: The rule of Delbet cheered us in both of our cases. In both we had a well-nourished foot although the ordinary points of pulsation were absent. We excised the second aneurysm, although we hoped to do an endo-aneurysmorrhaphy. The excision was done because, as was stated in reporting the case, the vessel reached across a cavity as a cable would across an open space in the air, and the oblitative operation would have interfered with healing and therefore the excision was done. The result of the Matas operation was as nearly perfect as one could hope for in dealing with a damaged circulatory apparatus.

MYOSITIS OSSIFICANS FOLLOWING A SINGLE TRAUMA *

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The occurrence of true bone in muscle has always held something of mystery, and even at the present time there is no generally accepted belief as to its method of origin.

Although comparatively rare, more than five hundred cases, each the result of a single trauma, have been reported in the literature. Up to 1907, Strauss¹ was able to collect reports of only 150 cases.

The malady results from a severe traumatism such as the kick of a horse, a blow from a sharp-cornered object, or dislocation of the elbow, without break in the skin or subsequent suppuration. Nearly all cases occur in the brachialis anticus or the quadriceps extensor, rarely in other muscles. It is found most commonly in vigorous middle-aged men. Porter and Quinby² state that it is most commonly a result of posterior dislocation of the elbow. Machol³ records sixteen cases following immediate reposition of uncomplicated posterior elbow dislocation and says that more than one-half of the cases at the elbow follow this injury. Frangenheim⁴ states that aside from this variety of dislocation, it has been known to occur but once in the subclavius following clavicle dislocation, and once in the subscapularis following humerus dislocation. Schultz⁵ collected 233 cases from records in the German army during ten years, and in all but three the new bone was in either the quadriceps extensor or brachialis anticus muscles.

The essential character of the process is the formation of typical spongy bone intimately incorporated in the muscle. At an early stage it is cartilaginous, varying greatly in extent and shape. In the arm it may involve the origin, middle or entire brachialis anticus muscle and often the periarticular structures. The most typical growth is a somewhat tapering piece of bone in the brachialis anticus attached by a narrow stem to the tip of the coronoid process of the ulna. But as a rule, the new bone is not firmly attached to the humerus or ulna. Of fifty-six cases at the elbow collected by Cahier,⁶ in twenty-six it was entirely movable, four pedicled, sixteen attached to the capsule, and one at first movable but later fixed.

In the thigh the formation is, as a rule, attached to the femur and has to be chiseled off. All cases are said to have attachment to the bone at some time during development, in the nature of a small pedicle, the remainder of the shaft having a smooth outline. The mass may be rounded, elongated, with irregular tongue-like projections, fan-like or coral-like, as in a case reported by Gruber.⁷ At times there is a shell of bone containing old blood-clot, and in other cases cysts with bony walls. The size varies greatly, Gruber recording a mass in the vastus externus measuring 17 by 7 by 4 cm.

* Read before the Chicago Medical Society, June 10, 1914.

1. Strauss: Beitr. z. klin. Chir., 1913, lxxxviii, 740.

2. Porter and Quinby, in Bryant and Buck: System of Surgery, vii, 38.

3. Machol: Beitr. z. klin. Chir., lvi, No. 3, p. 581.

4. Frangenheim: Arch. f. klin. Chir., 1906, lxxx, 445.

5. Schultz: Deutsch. mil.-ärztl. Ztschr., 1910, No. 4.

6. Cahier: Rev. de chir., 1904, xxix, 356; 602; 768; 827.

7. Gruber: Mitt. a. d. Grenzgeb. d. Med. u. Chir., 1914, xxvii, No. 4.

demonstrated microscopically a similar condition. König attempted to simulate the conditions in rabbits but was unable to produce new bone. Morley¹³ in a recent preliminary report states that he has been successful.

The conditions necessary to this form of new bone growth seem to be a destruction of parosteal tissues, often with the formation of a hematoma, connected with a break in the periosteum. In the repair of the damaged tissues granulation tissue forms and the osteoblasts, stimulated to growth by the trauma, grow along the newly formed vessels and produce bone. This view is supported by the finding in some cases of bone-walled cysts and bone cylinders containing lymph or old blood. On account of the rarity of the process, König believes that an individual predisposition must be added to this explanation.

Macewen's¹⁷ experiments with bone growing in glass tubes show the process well. The osteoblasts spread along the embryonic connective tissue which penetrates the blood-clot and forms bone directly. He records a case of an ossified wall of a false aneurysm resulting from piercing of the brachial artery by a spicule bone in fracture of the humerus. Many authors believe that this process is similar to exuberant callus and so-called parosteal callus formation. Frangenheim²¹ especially has called attention to the marked similarity clinically and histologically. That there may be an individual predisposition to increased bone formation is possible, but that there is a low-grade hematogenous infection present, as suggested by Berndt, is not at all probable.

That the affection has an anatomic basis is indicated by the fact that it is practically limited to the thigh and elbow. These have in common a thick covering of soft tissues about the bone, the deep layer of muscle being intimately adherent to the underlying periosteum over a broad extent. This lends itself well to the conditions believed necessary to the initiation of the process.

There can be little doubt that so-called parosteal callus, exuberant callus and so-called myositis ossificans following a single trauma are genetically the same. The pathologic and clinical findings bear this out. The process is not a myositis. The involvement of the muscle is incidental, the essential feature being the participation and development of the osteoblast in repair of the parosteal structures.

REPORT OF CASES

CASE 1.—P. P., aged 35, a fireman, came to the Central Free dispensary, July 21, 1913, complaining of a painful swollen elbow. Two weeks previously, while tusseling with a fellow-workman, he was thrown with the right arm twisted under him. He suffered extreme pain, and swelling developed immediately, resulting in complete disability. Two weeks after injury there was marked swelling about the right elbow with obliteration of bony landmarks, ecchymosis and entire loss of function. There was great tenderness, most marked at the external epicondyle. Roentgen examination showed no fracture. The joint was immobilized in a sling for ten days and then massage and passive motion begun. The patient reported no improvement and manipulation continued very painful. Aug. 7, 1913, about four weeks from the time of the accident, a mass of about the hardness of cartilage was felt just internal to the biceps tendon. It seemed somewhat fixed to the ulna. A roentgenogram taken Aug. 26, 1913, showed a shadow attached to the tip of the coronoid process below, extending upward 2 inches into the muscles

anterior to the humerus. It was very irregular in shape, with small sharp projections, and of variable density. There was also marked ossification of the periarticular structures, a continuous mass of bone extending from the external epicondyle to the head of the radius.

Improvement was gradual and after four months patient was able to do light work. Nov. 10, 1913, four months after the injury, examination showed the same mass, more easily palpable, pointed and somewhat moveable. The forearm could be flexed to 100 degrees, extension being nearly complete. Roentgenoscopy at this time demonstrated some decrease in size of the main growth which had the appearance of a hollow piece of bone.

Eight months after the injury, patient was doing heavy work without discomfort. The bony mass was about the same size and flexion was still limited to 90 degrees. Operation was refused.

CASE 2.—M. H., girl, aged 12, came to the Central Free Dispensary in February, 1910, complaining of pain and disability of the left elbow. Six weeks previously she had fallen, striking on the forearm. A competent surgeon diagnosed and reduced a posterior dislocation of both bones of the forearm. Rest for a week was followed by massage and motion. After a few weeks, disability became more marked.

On examination, a hard mass in the flexure of the left elbow was felt. The forearm could be flexed to 100 degrees and extension also showed some limitation. The Roentgen ray revealed a shadow extending into the musculature of the arm, attached at its lower end to the tip of the coronoid process. It consisted of two distinct parts, the lower about the size of the radius' head and the same density. The upper part was pointed, irregular and attached to the lower by a narrow stem. There was also noted ossification in the periarticular structures and beneath the raised periosteum on the outer side of the humerus, and also an incomplete fracture of the external epicondyle.

April 4, 1910, about four months after the injury, Dr. Lawrence Ryan removed a piece of cancellous bone from the coronoid process and with it a part of the brachialis anticus muscle. The growth involved the tendon and body of the muscle.

May 4, 1914, patient complained of no disability, being able to work as a stenographer. Flexion was limited to 95 degrees and extension only slightly. Just internal to the biceps tendon was felt a knob of bone firmly attached to the coronoid process. A corresponding mass was heaped up on the anterior surface of the humerus. Thickening about the condyles and a slight elevation at ulnar tubercle, besides a separate piece in the capsular structures were apparent in the roentgenogram.

(I am indebted to Dr. Ryan for allowing me to report this case.)

Having in mind the large percentage of cases reported by Machol which developed following carefully watched cases of posterior elbow dislocation, I have followed four such dislocations at the Cook County Hospital. Three were in children, and the fourth, in a man, was complicated by a fracture of the coronoid process. In none did this condition appear, probably on account of the laxity of the joint structures in the children and the fracture in the adult which minimized the traumatism of production and reposition of the dislocation.

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Etiology.—The way in which morbid causes act is in general very far from clear. The connection between extrinsic action and the cerebral lesion is almost always a very indirect one. Whole chapters in physiology and general pathology had to be written before certain distant relationships between disturbance of brain function and lesions of other viscera were discovered. — Lugaro, Problems in Psychiatry.

21. Frangenheim: Deutsch. med. Wchnschr., 1908, xxxiv, 497.

THE TREATMENT OF HEART INVOLVEMENT IN SYPHILIS

BASED ON A STUDY OF THREE HUNDRED CASES *

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AND

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NEW YORK

We have already written concerning the great frequency of heart involvement in syphilis.¹ Here and elsewhere,² we have discussed the character of the changes in the organ, pointing out that the most frequent and important lesion in all stages of the disease is one of the heart-muscle which is dependent on a periarteritis of the coronary vessels. This lesion was apparently first described by Isaac Adler,³ and its frequency of occurrence, since noted by many, has been recently verified by Warthin,⁴ who has demonstrated with considerable constancy the presence of spirochetes in these characteristic foci.

In another paper,⁵ presented as a continuation of our study of this subject we have discussed the symptoms and diagnosis of the complication.

Some of these cases have now remained sufficiently long under observation to permit us to discuss with some authority the question of treatment and its results, covering cases in the secondary and tertiary stages of the disease. It is our purpose to present in this paper certain aspects of this important side of the subject in so far as our rather brief though active experience now goes.

We have found it very difficult to discuss treatment in an analytical way inasmuch as so many cases have come under our observation on our hospital services, where definite data could not be elicited as to the precise methods of specific treatment previously employed, nor of its extent.

Obviously in a large percentage of the cases the time at which the heart-lesion developed could not be ascertained; in fact, this point could be surely fixed only in some of the secondary cases. The character and extent of previous treatment for circulatory discrepancies can also not be definitely determined.

We have included in our list for analysis a number of cases which have been treated in various hospitals or by private physicians with entire disregard of the luetic origin of the cardiac fault. Such instances have been included because we have found that comparison of these with those treated on the assumption of a definitely syphilitic change affords a basis for conclusions of value. Only four instances are found, however, in this series in which improvement without specific treatment took place.

Since a considerable number of cases have only been conclusively recognized by lesions discovered post mortem, it must be understood that it is highly probable that the percentage of fatal results in this

group of three hundred cases is overestimated, and it is therefore not mentioned, as having no accurate bearing on the treatment of this complication. The apparent recovery or signal benefit of equally desperate cases, when treated on the basis of the luetic origin of the heart defect, certainly indicates the necessity of such a therapeutic basis. We are keenly aware that so crude an analysis as is possible on material of this character does not establish a certain scientific fact, but we feel that our study, covering, as it does, over three hundred cases, has led us to conclusions of very real applicable value from the clinical point of view.

It will be noted throughout that our methods of treatment vary greatly, and that no one routine type of drug or procedure has been adhered to. This may be in part due to the fact that our therapeutic studies have been, and still are, in an experimental stage, but chiefly because we have been driven to the conclusion that in the treatment of patients suffering from this complication each instance must be definitely individualized, and that no one routine method will be found to apply with equal benefit in all cases. Unscientific as this conclusion may appear to some, to those long actively concerned in the treatment of disease in routine patients, it needs no defense, and the absolute necessity of such a basis for the best therapeutic results will be apparent.

We again wish to emphasize the fact that the essential lesion, in so far as the heart in syphilis is concerned, is a periarterial granulomatous or inflammatory change affecting the heart-muscle. From the standpoint of treatment, we believe that this assumption is most important, for our studies have shown the final or immediately lethal lesion in most cases to be a giving way of the muscle. Furthermore, we are convinced that in most cases where improvement has followed treatment it has been accomplished by a clearing up of these rather than of other lesions, though we recognize with Sachs, Collins and many others after them that a true endocarditis, even of considerable standing, may be absolutely removed by specific treatment.

We also wish to state that in our opinion some of the most brilliant results attributed to specific treatment in cases of syphilitic aortitis have in reality been achieved from improvement of the universal heart-muscle lesions, for many of the symptoms commonly attributed to this lesion are really due to muscle disease. This assumption is apparently supported by the recent pessimistic but undoubtedly accurate studies of Warthin.

CASE 1 (231).—M. F., woman, aged 50. Negative history as to lues. Five years ago, epigastric and precordial pain with vomiting, dizziness, headache and weakness. Shortly after, dyspnea on least exertion. One year later edema, precordial pain reflected down left arm into hand. All symptoms recently greatly increased. Physical examination showed poor muscle tone with systolic at mitral and at aortic rings. Broad area of retrosternal dullness, tenderness over manubrium. Roentgenoscopy shows dilated arch. Under circulatory treatment in hospital for three months, constantly losing ground, all symptoms progressing. Wassermann reaction negative. One grain mercuric salicylate given intramuscularly with idea of activating Wassermann. Marked improvement in pain within twenty-four hours. Circulatory drugs discontinued and mercuric salicylate continued in vigorous dosage. Patient now up and about ward, apparently free from all symptoms except on exertion. Wassermann reaction positive. Roentgenoscopy shows no apparent change in aortic shadow.

* From the Second Medical Service of the City Hospital.

* Read before the Section on Practice of Medicine at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Brooks, Harlow: A Study of the Heart in Syphilis, *Med. Rec.*, New York, 1912, lxxxi, 351.

2. Brooks, Harlow: Clinical Observations Concerning the Heart in Syphilis, *Inter-State Med. Jour.*, 1913, xx, l.c. 6; *The Heart in Syphilis*, *Am. Jour. Med. Sc.*, 1913, cxlvi, 513.

3. Adler, Isaac: Observations on Cardiac Syphilis, *Tr. Assn. Am. Phys.*, May 3, 1898.

4. Warthin, A. S.: *Tr. Assn. Am. Phys.*, May 13, 1914.

5. Brooks, Harlow, and Carroll, John: The Symptoms and Diagnosis of Involvement of the Heart in Syphilis, Based on a Study of Two Hundred Cases, *New York State Jour. Med.*, 1913, xiii, 328.

TREATMENT IN SECONDARY CASES

The early cases treated have mostly occurred either in the private practice of one of us (Carroll), or in the service of our colleague, Dr. J. A. Fordyce, who has greatly encouraged our studies of this subject. Twenty-four such instances have been observed. Two fatalities occurred among them (previously reported) but in both the nature of the disease and its complication had not been recognized in sufficient time to admit of proper treatment. Confirmatory necropsies were secured in both. Apparently complete recovery without any subsequent heart defect took place in all the other cases, save one to be mentioned later. We wish in this regard to point out the care which should be exercised by those in charge of early syphilis that cardiac strain be avoided until treatment has been established, and that the same necessity for consideration of the circulatory apparatus be recognized as in the other infections, diphtheria, rheumatism, septicemia and the like.

CASE 2 (199).—Man, aged 34. Service of Dr. J. A. Fordyce. In secondary stage of the disease. Complaints of shortness of breath, sudden attacks of precordial pain. Chills, fever, leukocytosis and the physical signs of pericarditis. Complete disappearance of signs and symptoms within three days after two doses of neosalvarsan (intravenously). The cardiac signs appeared within four weeks after initial lesion, which in this case was on nose. Apparent cure followed. Subsequent combined treatment.

Although practically all the early cases under our observation have been treated by the more modern methods, that is, with salvarsan, we are convinced that vigorous treatment with mercury in this stage would probably also result in almost as brilliant results. We wish to assert that, aside from general prophylactic measures, the treatment of cardiac invasion in early syphilis should be directed only to the specific infection and that circulatory treatment *per se* is at this time unnecessary and probably unwise.

Although we are convinced that in by far the greater majority of cases of early lues cure of a cardiac complication may be confidently expected, certain exceptions exist. This has been well illustrated by a case referred to one of us by Dr. Alphonse Wren.

CASE 3.—Patient, woman of 25. Came under observation in the aggressive secondary stage of the disease. She had been treated, apparently mostly with mercury and the iodids in various dispensaries and by private physicians. In spite of treatment exhibits mucous patches, marked skin rash, periosteal tenderness, fever, falling hair and other evidences of active secondary lues. While still under vigorous treatment with mercuric chlorid internal, mercurial inunctions, and after three doses of salvarsan carefully administered in an excellent clinic, developed cardiac muscle insufficiency, dilatation, active aortitis (without aneurysm) endocarditis and edema and cyanosis with severe dyspnea. Salvarsan intravenous again repeated in maximum dose. Mercuric salicylate injected intramuscularly until marked salivation and other evidence of mercurial poisoning appeared. Digitalis, strophanthus, camphor and the usual cardiac regimen apparently produced no effect whatever. The case was progressing rapidly and absolutely unchecked by either specific or circulatory measures when she passed out of our observation. Though her subsequent history cannot be ascertained, it is impossible to assume other than that early death followed.

In so far as could be judged by study and observation of this case, treatment of all kinds was entirely without avail in so far as checking the course of the infection or relieving the heart complication was concerned. This has been the only case in our observa-

tion in which treatment in the secondary stage has been apparently useless. Inquiry among syphilographers of wide experience has brought to light other and probably similar cases. They would, however, appear to be quite unusual.

TREATMENT IN LATE CASES

Most of the cases comprised in this series are those occurring, or at least presenting themselves, on an internal service for treatment in the tertiary or late stages of the disease; 277 instances of this type are included.

A few patients appeared for treatment for the first time because of their cardiac condition; but in most instances, and in practically all cases which came to our hospital service, they had been for a greater or lesser time under treatment either by private physicians or in institutions for their circulatory discrepancies. While in some of these cases a certain amount of benefit had been derived from such measures, mostly applied entirely without recognition of the cause of the circulatory defect, the very fact that they appeared for treatment shows that these measures in themselves had been found inadequate, probably even at the very outset of the complication. As illustrative of this point we wish to present briefly the case of a fire captain 52 years of age.

CASE 4.—He came to one of us suffering severe precordial pain and so marked a grade of dyspnea that he was hardly able to get about. He had been ordered before the retiring board because of physical disability. On examination he showed loud, double aortic murmurs, and irregular and considerably dilated heart, together with the symptoms of a probable aortitis. The man gave a history of a probable rheumatic fever but denied that of syphilis. He was placed on digitalis, but without good effect. Because of the failure to respond, and also because of the evidence of an old tibial periostitis, although a Wassermann had been refused, he was taken off the cardiac medication though, of course, circulatory precautions were still insisted on. He was tentatively placed on protiodid of mercury by mouth. Within a few days such marked improvement had taken place that when the patient was confronted with the facts of the case he admitted a syphilis twenty years ago, which had been at that time briefly treated. A continuation of the same line of treatment with the protiodid of mercury, assisted by potassium iodid, has resulted in complete disappearance of the dyspnea and other evidences of cardiac incompetence. The double aortic murmurs have practically disappeared and he has been doing full duty for some twelve months and is to-day in comparatively complete health, although still under treatment with the mercury.

These two facts stand out in this illustrative case: circulatory medication was entirely without avail, complete circulatory relief was afforded by the simple administration of mercury.

Notwithstanding frequent brilliant results of this kind, in tertiary instances we have found it by all odds most advisable to also place the patient under the usual hygienic and therapeutic regimen indicated by the circulatory condition. Those cases which, independent of the cause, should be put at rest or in bed, should be, of course, so managed. Furthermore, when digitalis, strophanthus, camphor, strychnin or epinephrin seem to be indicated, they should be given. We have found, however, that in most instances these measures do not give the expected amount of improvement, except for that directly due to rest, in whichever form it may be decided, unless and until the patient has been under the effects of specific medication of one or another variety. Not at all infrequently, as in the

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instance cited above, such a measure is at once followed by so marked benefit that the drug measures designed for circulatory compensation may be advantageously discontinued. In long-standing cases, however, particularly those in which it may be fairly assumed that fibrosis has taken place in the heart-muscle, the use of digitalis and its adjuncts or substitutes is absolutely necessary. A fact most vividly shown, however, is that these drugs used alone fail in most instances to give good results unless combined with the specific methods.

Although immediate improvement may follow the introduction of specific medication, it has been amply demonstrated in this, as in all other types of luetic disease, that for permanent results or even for steady progress, the specific medication must be persistently carried out. With a discontinuation, such as has taken place frequently when patients insist that they are sufficiently well to leave the hospital, and probably rarely then continue to carry on the treatment in any thing like an adequate manner, relapses are apparently almost certain to occur. We have noted that when the treatment has been thus interrupted when it is resumed rarely indeed does a prompt response to it occur comparable to that first manifested. In other words, a tolerance of the lesion against the drug seems to have become established in some cases.

CASE 5 (67).—Man, aged 51. Chancre at 30 years. Local treatment only. Present illness began in 1908. Chief complaint, dull, boring pain in left chest associated with dyspnea. For two years a constant increase in distress. Has been under almost constant circulatory treatment without relief. Wassermann positive. Given 1 grain mercuric salicylate hypodermically every 5 days. Pain, dyspnea and edema began promptly to subside. Treatment continued for nine months (sixty-six injections); three doses of salvarsan also given intravenously together with various symptomatic measures. Patient able to be discharged and to resume work as cook after three years of total invalidism. Two months later, treatment having been discontinued, symptoms reappeared, to disappear promptly under resumption of the mercury. The subsequent history has been a return of symptoms whenever specific treatment has been discontinued. Circulatory measures are now necessary to reach the results previously easily obtained by purely specific drugs.

Where the patient can be closely followed and treatment persistently enforced, progress seems to be steady to the point of apparent cure in no inconsiderable number of cases, as indicated by the fact that of the series of 300 cases so treated 116 have shown apparently permanent benefit if not actual cure. The most impressive fact of all is that a large number of cases which appear apparently hopeless go on to clinical cure.

TREATMENT WITH MERCURY

As to the precise method of specific treatment which meets with best success in these complications of syphilis, no conclusion appears as yet possible to us except that, at least in most instances, it is a matter of individualization. In not a few cases best results seem to follow an initial vigorous administration of mercuric salicylate given intramuscularly, and in general this would appear to us to be on the whole the most desirable method at the outset. The drug should be pushed to its full point of toleration, but may be subsequently replaced by mercury in the form of the protiodid or bichlorid introduced by mouth. In some cases, as in an instance already cited, the protiodid appears to be very desirable. It seems to us that such instances are those which do not manifest the most

aggressive and active symptoms and, though we are well aware that this form of mercury does not enjoy a good reputation with syphilographers in general, it has given us excellent results in many of these heart cases. Mercuric chlorid has also given us good effects in some instances, either given by mouth or by hypodermic administration.

CASE 6.—J. D. Seen seven years ago with Dr. C. J. Imperatori. Patient a powerful, rather obese man, aged 26. Patient unconscious, complete anuria, heart enormously enlarged. History of long standing, apparently progressive double aortic lesion with very unsatisfactory response to digitalis, etc. Apparently in *extremis*. He had denied lues, but because of social evidence to the contrary he was given vigorous dosage with mercuric chlorid by mouth and inunctions over precordial area and consciousness, with subsequent cessation of renal activity and reappearance of regular, full pulse with cordial pain and reemergence of strong, vigorous muscle marked double aortic murmurs and from moderate dissipation. Mercury continued in a proper manner. Given potassium iodid which now acted in a proper manner. He largely disappeared from observation up to last year, when he returned with a history and condition of relapse which had developed apparently from discontinuance of treatment and from moderate dissipation. He had meanwhile carried on his work and lived an ordinary life. Relief again followed resumption of treatment but he suddenly died some four months later, apparently from acute dilatation after intercourse.

Inunctions of mercury ointment given in the usual courses also seem to act very well in many cases. In one notable instance we found little result and a very poor toleration of mercury until the old-fashioned, and to our mind usually uncertain, treatment with vapors of calomel was instituted. In practically all instances we have received best results when the form of treatment or of the drug was from time to time altered but, on the other hand, actual interruption of treatment has been followed frequently by relapse and a subsequent unsatisfactory response to this drug. We are anxious none the less not to give the impression that we believe that every case of late syphilis with heart complications will respond to mercurial treatment, and to emphasize this point we cite the following case:

CASE 7.—V. H., man, aged 51. An irregular, though shrewd, practitioner in venereal diseases. Lues contracted twenty years ago. Was very aggressively treated at that time with inunctions and by "mixed treatment." Apparent cure. Subsequent life often dissipated. Late in 1913 began to be troubled by anginal attacks, dyspnea, cyanosis and spontaneous attacks of dizziness. Wassermann reaction found to be positive. Diagnosis of luetic myocarditis, adhesive pericarditis, aortitis. Varied mercurial treatment promptly and vigorously resumed, associated with occasional use of iodids. After this some, though unsatisfactory, response to digitalis, strophanthus and epinephrin, all of which had been previously found inert. Wassermann became negative. Patient absolutely refused to permit the use of salvarsan, saying that he preferred to die rather than to submit to it. Soon died, with the ultimate typical picture of a myocardial degeneration.

TREATMENT WITH SALVARSAN

Salvarsan has been employed in the treatment of seventy-five of this series. In the acute or secondary stage, used independently of mercury, it has in nearly every instance been followed by immediate improvement of the compromised circulatory mechanism, even in patients in whom the circulatory defect appeared to be serious. In such cases it may be that complete cure might follow the use of this drug alone. In all, however, a follow-up course of mercury has been

prescribed; some instances observed by us, but not included in this analysis in which salvarsan alone has been employed have not yet remained a sufficient time under observation to allow us to judge as to the permanence of such apparent cures. These brilliant results are much less frequently apparent in later cases, however, and such is our confidence in and reliance on mercury that in no cases have we ourselves continued the use of salvarsan alone.

Our experience has indicated to us that, while no doubt salvarsan gives a most prompt response, its permanency in tertiary complications, referring entirely now to those of the heart, does not appear to be established unless the treatment is followed up by the protracted use of mercury. Where very prompt response to treatment seems to be necessary salvarsan is given, but in cardiac even more than in other complications of this infection a very serious degree of reaction may follow the giving of salvarsan and more than seldom we have been greatly alarmed by circulatory collapse which has followed the administration of salvarsan in those cases especially in which symptoms and signs indicated particularly aggressive invasion of the heart-muscle.

We have been impressed with the observation that those cases which showed disturbances of rhythm as a result of the myocardial invasion are most likely to exhibit serious reaction after the use of salvarsan. We have therefore esteemed it to be good practice to begin the use of arsenic in these cases of heart complication by small doses, allowing the subsequent ones to be larger if no serious grade of reaction is excited. Of all the cases treated by us there were none in which any grave circulatory disturbance threatened as an apparent result of a maximum initial dose of mercury.

As a natural result of these observations we have in questionable cases, and when time did not seem to be of paramount importance, usually first placed the patient on mercury, giving the salvarsan later. We are of the impression that best results are often reached when the salvarsan injections are widely spaced in the course of routine mercury administration. The later injections of salvarsan are much less likely to give serious disturbance than the earlier, especially the first one. Of course it goes without saying that salvarsan is administered only as intravenous injections. It is a very difficult matter to judge, nor do we feel that our cases have been sufficiently numerous to permit of definite conclusions, but we are of the opinion that the old salvarsan is more efficacious in the relief of heart complications in syphilis than neosalvarsan. We have not been able to see that the newer form of the drug produces any less serious collapse than the old in these cases in which this incident arises.

THE IODIDS

We have extensively employed the iodids, mostly potassium iodid, in the treatment of these cases of heart invasion. In no instance, however, have we been able to convince ourselves that it acts in any way as a specific. Nor does it, according to our observation, check the progress in an aggressive case. For illustration, we have not found in cases of circulatory deficiency when drugs of the digitalis group failed to act, that results were obtained by combining the administration of the iodid. This, as we have already stated, is to be fully expected, especially in previously untreated cases both with mercury and salvarsan. We have not, however, tried out the iodids alone in cases

of secondary syphilis in which heart involvement was present; hence, perhaps, we are not justified in definite conclusions, but we do not believe that this drug is to be considered as a specific in the treatment of active lues.

In tertiary cases, however, there is no doubt whatever in our mind but that the iodids materially assist in the clearing up of the infiltration and exudates, and their effect on gummatous tissue is too well established to admit of question. The point which we wish to make is that, while it is most useful in the absorptive stages of treatment, it does not act as a true specific. Iodin should be used after the case has been thoroughly mercurialized, or after salvarsan has been liberally given, and not before or during the early exhibition of these drugs.

THE EFFECT OF TREATMENT

That great clinical improvement takes place in most cases and a certain degree of benefit, though perhaps temporary, in practically all, is the most gratifying fact shown by this study. We are entirely convinced that as definite and brilliant results follow proper treatment in cardiac syphilis as in gumma of the brain, in syphilis of the bones or even in the local lesions of the skin and mucous membranes in the same stages of the disease. As to the question of permanence, we are not so certain, comparatively. This is quite as must be expected from the crucial nature of the organ and the very limited degree of restitution and compensatory hyperplasia of a functional type which may take place in lesions of the heart-muscle.

In regard to the manner in which the curative drugs act, we have but little absolute anatomic evidence, for in but two patients who died after what we have considered adequate treatment have necropsies been secured. Sections of the heart-tissue in these two cases (one reported⁶) showed a total absence of the characteristic perivascular cell hyperplasia and infiltration, or of active arteritis in the walls of the coronary vessels. In both instances, however, insulae of fibrosis were found isolated and perivascular in position which still showed evidence of fibrous hyperplasia, just as in simple fibrosis, but in neither were any lesions present which could be justly spoken of as luetic. In neither instance were we able to demonstrate spirochetæ. In view of the report of Warthin already mentioned, however, we are not prepared to say that they might not have been present and our failure to demonstrate them may have been due to technical deficiencies; we can only say that anatomically, as clinically, all evidences of active syphilitic disease was wanting, although the scars or results of course remained.

In incompletely treated cases which came to necropsy we have without exception been able to demonstrate active lesions of a quite characteristic and unmistakable type.

In common with most who have recently studied large groups of any type of syphilitic disease we have not infrequently seen cases in which apparent clinical cure had taken place and yet in which a positive Wassermann reaction could be secured after a sufficient period of interruption of treatment had elapsed. We have looked on these instances as examples of probably cured syphilis in which a persistent Wassermann still remained. This opinion has been already expressed by us in a former paper.⁷

6. Brooks, Harlow: *Am. Jour. Med. Sc.*, 1913, cxlvi, 513.

7. Brooks, Harlow: *Clinical Observations Concerning the Heart in Syphilis*, *Interstate Med. Jour.*, 1913, xx, No. 6.

We have had abundant evidence of the fact that the fibrosis which follows on or occurs with the hyperplastic and degenerative alterations of the heart in syphilis are not removed by treatment; further, we are of the opinion, difficult to entirely prove, that this fibrosis may continue to progress even after the primary etiologic factor may have been entirely eliminated. Such is the general trend in fibrosis of non-specific nature, and we are inclined to account on this basis for those cases which, while greatly improved or arrested by the treatment, still, in so far as cardiac fibrosis is concerned, continue to progress just as in those cases in which the lesion may have been excited by a rheumatism, a nephritis or the like. There is then a large group of cases in which definite limitation of actual cure is present.

THE LIMITATIONS OF TREATMENT

We are of the opinion that the limit of benefit for specific treatment in these conditions is commonly reached in tertiary or late cases, when the activity of the actual syphilitic process has been checked or cured and when thereafter by the use of the iodids a maximum degree of absorption and tissue restitution has followed, and when on top of this a maximum effect has been produced by the various drugs and methods designed for circulatory improvement.

Some such cases probably demand the occasional administration of mercury or arsenic. We have been unable in several such instances, however, to go beyond a certain point in beneficial treatment, and when in these the circulatory drugs begin to fail us, the downward progress is, in our observation, rapid, nor is it to be checked by any form of medication, specific or otherwise. The patients then assume precisely the same position as late cases of myocardial degeneration or fibrous substitution, such as may develop in the course of many other diseases. At post mortem these instances commonly show extensive patches of myofibrosis, or advanced disease of the coronary arteries with consequent muscle ischemia.

From our somewhat limited experience with cases of acute secondary syphilitic involvement of the heart, we are of the opinion that no limitation of result exists short of true cure except in those rare cases, similar to the one cited, in which specific drugs are entirely powerless. We are of the idea, it is true from a clinical basis only, that complete and absolute cure is to be expected in this stage of the complication.

WHEN SHOULD SPECIFIC TREATMENT BE ENTIRELY DISCONTINUED?

The answer to this question is most difficult. Obviously in some instances it must be continued after a negative Wassermann has been obtained; for we frequently find patients in whom activity is evident and yet who give a negative Wassermann. We have also noted above that we occasionally find patients still presenting a positive reaction who otherwise appear to be cured.

From our experience in the treatment of syphilis in other departments of medicine, as well as in circulatory involvement, it is obvious that medication of a specific character must be continued for a considerable time, at least one year, after all signs of activity have subsided. We believe, however, that better results are obtained by periodic rather than continuous medication in the final stages and also by variation of the type of the drug or in its form of administration.

We think that treatment should be continued just so long or longer as it is apparent that benefit is being reached either by the specific drug or by the adjuvant employment of a circulatory stimulant. We further believe from our clinical observation, and from our own as well as the recent anatomic studies of the heart-muscle in syphilis by Warthin, that antispecifics should be from time to time given throughout lifetime in certain cases. It is obvious that just so long as any evidence whatever of luetic activity in any part of the body is manifest, treatment should be vigorously pushed, though periods of interruption may be elected so that disease resistance toward the drugs falls off.

THE SUBSEQUENT MANAGEMENT OF THE CASE

We have just pointed out that, except in acute secondary involvement, we feel that antiluetic drugs may be occasionally beneficially exhibited throughout life even though they may not perhaps be directly indicated by the immediate appearance of the case itself. Aside from this, the subsequent management of the case should be essentially along circulatory lines and it should be carried out with the fact well borne in mind that practically certainly there are foci of fibrosis in the heart-walls, changes in the endocardium and in the walls of the coronary vessels which are in all probability irremediable and permanent.

This recognition appears particularly important in the determination of the proper hygienic management of the case, especially in regard to selection of occupation or sports and in the limitation of such habits as that of smoking. In late cases it can certainly never be assumed that we are dealing with a perfectly normal heart no matter how complete the cure may seem to be. While we make this statement, based on our considerable necropsy experience with these cases, from clinical observation alone one might well assume that complete cure even in some late and advanced cases had taken place. We do not feel, however, that any of these apparent cures have yet remained a sufficient number of years under observation to overthrow the lessons of pathologic anatomy.

THE PROGNOSIS

In acute cases, and in the secondary stage particularly, we believe that except in those instances in which resistance to the specific drugs is shown, a good prognosis as to cure may be given.

In cases in which incomplete or brief specific treatment only has been given, we believe that almost without exception great improvement may confidently be promised even in many instances in which circulatory measures alone show little benefit. When, after the patient has been thoroughly placed under the effects of the specific medication, the circulatory drugs still fail to act, the prognosis as to cure or further improvement is definitely bad.

Nevertheless, a bad prognosis as to relief or a considerable period of reasonable comfort and usefulness is never justified until the combined treatment has been thoroughly tried out. No more gratifying results are reached in chronic cases of any disease than are often shown in cases of this type, apparently at first thought altogether hopeless.

The prognosis in cases which have relapsed after marked or reasonable improvement is not good. Disturbances of rhythm particularly which have failed to show early and definite improvement under treatment rarely justify a good prognosis.

CONCLUSIONS

1. Cases of heart involvement in early syphilis may be fully cured irrespective of the character of the lesion by vigorous specific treatment alone and independent of circulatory measures.

2. Even well-established and late cases usually respond to treatment with cure, or marked though perhaps temporary benefit.

3. In most tertiary instances purely circulatory measures produce but slight benefit unless preceded by or combined with specific medication.

4. Interrupted or inefficient treatment establishes an immunity or resistance on the part of the lesions against the specific drugs employed. Hence the importance of vigorous and carefully systematized treatment.

5. The most satisfactory treatment is one which combines the use of salvarsan with mercury and the iodids. Combined treatment *may be unnecessary* in early cases but it is essential in late ones.

6. Salvarsan, preferably old salvarsan, produces in most instances the quicker results. It is capable, however, of inducing serious symptoms and in untried cases of heart involvement it should be administered in small doses until its action has been ascertained, particularly in those lesions characterized by disturbances of rhythm.

7. Mercury alone may produce apparent cure. Best effects are secured with this drug when its form is from time to time changed. Its use appears to be *indispensable* in all well-established cases.

8. The iodids are valuable adjuvants in the treatment of these cases, especially in their late stages, but they are apparently without specific action.

9. Permanent injury to the heart must be assumed to have taken place in late cases, even though prompt response to treatment and apparent cure occurs.

10. Successful treatment rests primarily on the recognition of the *cause of the disease* and on its specific treatment.

44 West Ninth Street—50 West Ninth Street.

THE FOUR COMMON TYPES OF
HEART-DISEASE

AN ANALYSIS OF SIX HUNDRED CASES*

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To classify cases of disease according to their pathogenic agent or process, and not solely by naming the region affected or the function disturbed, is the ideal of scientific progress in medicine.

But until the last decade we have made little advance in this direction as regards the diseases which gravely disturb heart function. Thus we still find in standard text-books a section devoted to "mitral regurgitation," its diagnosis, prognosis and treatment, although mitral regurgitation is almost as vague a phrase as "spinal paralysis" or "brain fever." Just as a "spinal paralysis" may be due to trauma, to the tubercle bacillus, to the *Spirochaeta pallida*, to the organism of poliomyelitis or to cancer, so "mitral regurgitation" is only a symptom caused by the action of streptococci, by the degenerative lesions of arteriosclerosis, by the muscle-tiring

resistance of nephritic hypertension and probably by many other causes. It probably contributes its mite to the downfall of cases of pernicious anemia, typhoid fever and puerperal sepsis. Hence there can be no rational prognosis or treatment of mitral regurgitation but only of the various underlying diseases in which this leak is a symptom.

A similar criticism applies to all diagnoses of "myocarditis." The micro-organism of rheumatism and of syphilis, the ravages of arterial disease and perhaps many other causes may produce the lesions of chronic fibrous myocarditis, with or without recognizable symptoms. A diagnosis of myocarditis is like a diagnosis of "ulcer"; it calls for an etiologic qualification, such as syphilitic or tuberculous.

The matter has many practical aspects. A sane prognosis and treatment of "aortic regurgitation," for example, depends on knowing or guessing what disease has produced it. Even physical diagnosis may have to await an intelligent interpretation of its results until we make up our minds what micro-organism is at work, in the heart, as well as elsewhere in the body. When we hear a low, rumbling presystolic murmur at the heart's apex and an early high-pitched diastolic along the left sternal margin, our conclusions about the mitral valve depend on our answer to the question, "Is syphilis or 'rheumatism' at work here?" If the former, then the mitral valve is probably sound; if the latter, probably diseased.

Four relatively new tests have now made it possible—as I think—to reclassify cardiac lesions more satisfactorily: the Wassermann reaction, the "red test" of renal function, the measurement of blood-pressure and the roentgenography of the chest. When auscultation, percussion and the older methods of urinary examination leave us in the lurch, the four diagnostic methods just mentioned can often guide us aright.

With the help of these methods I have attempted a classification of 600 recent hospital cases in which a failing heart was the most notable feature. The results are shown in the accompanying table.

CLASSIFICATION OF CASES WITH FAILING HEART

	Male	Female	Total
1. Rheumatic	108	170	278
2. Syphilitic	52	22	74
3. Arteriosclerotic	53	40	93
4. Nephritic	59	58	117
	272	290	562 (93% of all)
Goiter heart	3	5	8
Doubtful cases	19	11	30
	294	306	38 (7% of all)
Total			600

THE RHEUMATIC TYPE

Under "rheumatic" are grouped the cases of weakened heart, adherent pericardium and valvular disease associated with (a) acute non-gonorrheal polyarthritis ("rheumatic fever"); (b) chorea (of Sydenham's type); (c) acute tonsillitis, and (d) "primary endocarditis" with negative Wassermann reaction, especially when the cardiac symptoms followed these diseases during the patient's youth. In my opinion it has been demonstrated by the converging results of Eng-

1. Phenolsulphonaphthalein.

* Read before the Section on Practice of Medicine at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

lish, German and American work as the best working hypothesis that a streptococcus is the exciting agent of acute "rheumatism," chorea, endocarditis and tonsillitis.² This streptococcus in the joints produces acute rheumatism, in the brain chorea, in the heart endocarditis, myocarditis and pericarditis. It may attack the heart first and later the joints. Then our old terminology would make it appear that endocarditis is the "cause" of rheumatism. It may attack first the brain and heart, appearing later in the tonsillar or peritonsillar tissue. It may attack the heart and kidney simultaneously, so that we find true cardiac and renal disease from an identical organism, as Libman and others have maintained.

This form of streptococcosis is essentially a disease of youth, both in man and in the animal experiments of Rosenow. In 60 per cent. of the cases here analyzed the disease began (usually in the joints) before the twenty-second year. The patient rarely dies a mechanical or heart-death, usually an infectious death, by terminal, progressive or relapsing infection. Women are affected more often than men—nearly twice as often in these statistics.

The mitral valve, the pericardium and the myocardium are the favorite seats of bacterial invasion, the other valves much less often. In the valves this form of streptococcosis produces usually stenosis with more or less leakage—but almost never leakage alone. In other words, mitral stenosis is *the* rheumatic (or streptococcic) valve lesion, although it is combined with aortic stenosis in a relatively small percentage of cases. It rarely produces aortic stenosis without a severer stenotic lesion of the mitral. It seldom if ever produces severe symptoms or death by leakage (mitral, aortic or both) alone, though it often produces systolic apical murmurs alone.

On the other hand, it seems probable that stenosis at the mitral or aortic valves involves regurgitation as well in practically every case.

When a cardiac streptococcosis occurs in its most virulent and intractable forms, we call it "malignant," "ulcerative," "septic" or "slow" (endocarditis lenta) and we find in the blood (according to Rosenow) a streptococcus culturally distinguishable from the organism of the milder cases. Nevertheless, I have here included all such cases in the "rheumatic" group of my table.

If the patient survives the second decade of life his smouldering, often recrudescing, cardiac infection may die out, leaving a serviceable heart, despite some narrowing at mitral or even at the mitral and aortic valves. Such cases carry a good prognosis and are often compatible with twenty, thirty or forty years of hard work.

SYPHILITIC HEART-DISEASE

Most cases of "causeless" aortic regurgitation appearing in men between 20 and 40 without "rheumatic" history have a positive Wassermann reaction and may be considered due to syphilitic aortitis with or without aneurysm. In negroes and south Italians we find a great deal of this type of heart-disease because of the prevalence of syphilis among them.

I have included twenty-four such cases, together with the eighteen aneurysms, among the syphilitic group in my table. To these I have added a group of thirty-two failing hearts, with or without evidence

of valve lesions, without rheumatic history, without evidence of nephritis or arteriosclerosis, but with a positive Wassermann reaction. The permeation of the congenital syphilitic's myocardium with spirochetes (as shown by Warthin and others) makes it probable that in adults as well, many cases of myocarditis are due to syphilis. Probably a more searching study would result in transferring some cases from the arteriosclerotic to the syphilitic column in my table.

ARTERIOSCLEROTIC HEART-DISEASE

Under "arteriosclerotic" are included the cases of weakened heart in elderly persons with sclerotic peripheral arteries and hypertension, often with angina pectoris, occasionally with cerebral or peripheral symptoms of the arteriosclerotic type, and always with negative Wassermann reactions. I do not attempt to decide the question whether any of the hearts of this group are weakened solely as a result of renal arteriosclerosis or whether generalized arteriosclerosis works part or all the mischief. In either case arterial disease is the cause. If anemia is present these cases more often belong in the next group.

With further knowledge this arteriosclerotic group could probably be subdivided into the plumbic cases, those of infectious origin, etc. The heart itself shows enlargement, weakness, often arrhythmia or gallop-rhythm. Angina pectoris and the cerebral and peripheral evidences of arteriosclerosis are often present. Such patients often live many years in comparative comfort. On the other hand, they may die suddenly of coronary stenosis or cerebral hemorrhage.

NEPHRITIC (OR NEPHROGENIC) HEART-DISEASE

Volhard and some other modern authors would designate many of my "arteriosclerotic" cases as "benign chronic nephritis." But it seems to me more convenient to confine the term "nephritic or nephrogenic heart-disease" to the cases of weakened and enlarged heart apparently resulting from the hypertension of glomerulonephritis.

Such cases are associated with urinary anomalies more marked than those seen in the arteriosclerotic group. The hyposthenuria, the nocturia, albuminuria, cylindruria and especially the functional weakness with the "red test" are very marked. The response to cardiac stimulants and to drugs like theobromin sodium salicylate is feeble. Demonstrable arteriosclerosis of the peripheral vessels is slight or absent. Uremic manifestations, retinitis and anemia are relatively common. The patients of this group average 36 years of age, those of the arteriosclerotic group 59 years of age.

Cases with positive Wassermann reaction or marked history of rheumatism are excluded. The heart itself shows enlargement, an accentuated aortic second sound, sometimes a systolic murmur at the apex or base, often gallop-rhythm and valvular first sound, occasionally an absolute arrhythmia. The usual prognosis is for not more than one or two years of life. Most of the cases of "senile heart," "cardiorenal" disease, "myocarditis" and myocardial weakness have been grouped with the arteriosclerotic cases, some with the nephritic, a few with the syphilitic.

The table shows that 93 per cent. of 600 successive and unselected cases of failing heart can be pushed into one of these four groups. How much violence was used in the grouping process I shall try to suggest later on.

2. As well as certain cases of pleuritis, pericarditis, peritonitis, iritis, meningitis, pneumonia and nephritis.

THE EXCLUSIONS

Outside these four groups fall: (a) the "goiter hearts," that is, those showing no cause for weakness except a thyreogenic intoxication (exophthalmic goiter); (b) the "obese hearts," manifesting decompensation in very fat persons without streptococcic (rheumatic) or syphilitic infection, or arteriosclerosis, nephritis or thyreotoxicosis; (c) certain cases of myocardial weakness without any known cause. Had any of these occurred in athletes or ex-athletes they might have been called "athletes' heart." But they did not.

LIMITATIONS OF THIS CLASSIFICATION

One patient had a history of syphilis, a positive Wassermann and an aortic regurgitation; also a "rheumatic history," a continued fever, murmurs suggesting a mitral lesion and a pure culture of atypical streptococci in the urine. He seems to belong in two classes at once (Classes 1 and 2).

Three patients (two with necropsy) had a "rheumatic" heart and type of history; also a glomerulonephritis. There is good reason to believe that the same organism caused the two lesions. I have, therefore, classed these cases in the "rheumatic" (streptococcic) group despite the presence of a glomerulonephritis.

There are good grounds for holding that arteriosclerosis and glomerulonephritis may act conjointly and simultaneously to weaken the patient's heart. In my table the few cases which seemed to me of this type were grouped among the "doubtful cases."

Many believe that syphilis may cause arteriosclerosis. If so, Groups 2 and 3 of my table would in part coalesce. The "syphilitics" of this table are the relatively active cases with positive Wassermann.

SUMMARY AND CONCLUSIONS

1. Ninety-three per cent. of 600 recent hospital cases of failing heart have been found to group themselves without much resistance into four classes: rheumatic (streptococcic), syphilitic, arteriosclerotic and nephritic.

2. About 5 per cent. cannot easily be thus classified. The remaining 2 per cent. are "goiter" hearts.

3. In the 278 rheumatic cases females predominate: 170, or 61 per cent., to 108 males, or 39 per cent.

4. Sixty per cent. of these rheumatic cases began before the twenty-second year. The typical rheumatic heart patient is therefore a young girl.

5. Of the seventy-four syphilitic cases 70 per cent. were in men; only 30 per cent. in women. The typical syphilitic heart patient is a middle-aged man (average age 47), with aortic regurgitation and no rheumatic history.

6. The ninety-three arteriosclerotic patients averaged 59 years of age. The 117 glomerulonephritic patients averaged 36 years. The arteriosclerotics are therefore twenty-three years older than the nephritic. The sexes are about equally represented in the two groups.

7. Diagnosis, prognosis and treatment are put on a more rational basis if we give up the terms "myocarditis," "cardiorenal" disease, "aortic regurgitation," "mitral regurgitation" or qualify them with an adjective like "syphilitic," "rheumatic" or "arteriosclerotic."

8. Practically all the stenoses belong in the rheumatic group.

1 Marlboro Street.

CARDIORENAL DISEASE

THE CLINICAL DETERMINATION OF CARDIOVASCULAR
AND RENAL RESPONSIBILITY, RESPECTIVELY,
IN ITS DISTURBANCES*

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DEFINITION OF THE TERM "CARDIORENAL DISEASE"

The clinician encounters many cases, mainly in persons of middle age or older, in which evidences of cardiac weakness and other circulatory disturbances, such as high pressure, are associated with signs of failure of renal function or urinary indications of renal disease. When this combination of symptoms is of such character that the observer cannot readily assign to either the cardiovascular system or to the kidneys the preponderance of responsibility, the term "cardiorenal disease" is often employed. The term, therefore, comprises cases of combined cardiovascular and renal disease without such manifest predominance of either as to justify a prompt determination of the one element as primary and important and the other as secondary and unimportant.

Among the pathologic conditions included in the term are three important groups: (1) primary valvular or myocardial disease with secondary renal disease; (2) primary arterial or arteriolar disease with secondary renal and myocardial disease, and (3) primary renal disease with secondary myocardial and vascular disease. It has long been an interesting and puzzling problem of the pathologists to determine the onset and initial stages of certain types of combined vascular and renal disease, and discussion of conflicting possibilities continues; but the clinician is called on to act at once in directing treatment in many of these cases when the clinical picture may lack clear indications to guide him.

A few examples of his difficulties will suffice to indicate the nature of his problems. A case of cardiorenal disease is mainly characterized by dyspnea, and in view of the evidences of cardiac and renal trouble, the determination of the responsible cause is difficult. Shall the physician rely on cardiac stimulation and hope for improvement from acceleration of pulmonary circulation, or shall he bleed or purge or sweat to remove the accumulated results of renal inadequacy?

A second case is one of stupor or actual coma in an aged person with evident arteriosclerosis, myocardial and renal disease. Shall the physician stimulate circulation with the thought that cerebral arteriosclerosis and possibly beginning thrombosis are responsible or shall he direct his treatment toward combating a uremic condition?

A third case is one in which attacks of acute pulmonary edema have occurred in a person with high arterial pressure, myocardial disease and manifest nephritis. Shall treatment be used to strengthen cardiac power without regard to pressure, or shall the renal element be adjudged the serious fault and active elimination employed?

In still another case in which a general failure of health and nutritional disturbance occur in a person suffering from cardiac weakness, arterial disease and nephritis, the physician must decide whether cardiovascular stimulation or eliminative methods are requisite.

* Read before the Section on Practice of Medicine at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

In any one of these instances, it might be suggested that the best way to treat the case would be to take into consideration all of its elements and employ such treatment as might reasonably seem effective against each of these. Such a course would perhaps appeal to one who has a merely theoretical knowledge of the difficulties involved, but never to a practical clinician whose whole training and experience would remind him that in complicated conditions successful treatment is always that which takes hold of the one important functional defect and corrects it. As well might one employ a combination of remedial measures to combat a case of generalized and complicated syphilis in which a recognition of the central cause and salvarsan or mercury were required!

As in other matters of treatment, the important underlying principle here is that the essential fault must be determined and if possible corrected. Any complicated combination of measures directed toward this and that is an indication merely of indecision and inefficiency. Effective remedial measures are almost always simple and direct. Let us take lessons from our surgical colleagues: A protracted medical treatment of vague gastro-intestinal troubles fails and the disease yields to the removal of a damaged appendix; an obscure case of illness, with occasional fever, emaciation and a variety of symptoms terminates when a calculous pyelitis is recognized and the stone is removed; a long-standing "rheumatism" of the ankles and knees subsides when fallen arches are supported. None of these ought especially to be heralded as triumphs of surgery, but should rather be regarded as instances of previous failure of medical diagnosis.

Treatment directed toward symptoms or even functional disturbances without recognition of the real source or cause of trouble is almost sure to fail. Nowhere in my opinion is this more frequent than in the domain of cardiorenal troubles. One uses intensive treatment to modify blood-pressure, another attacks a supposed uremic trouble with active eliminative measures, a third believes the cardiac symptoms significant of the fundamental fault, and a fourth eases his conscience by a combined treatment of a variety of possibilities without subjecting himself to the test of determining what he really thinks is the fundamental defect.

THE CLINICAL INDICATIONS OF CARDIORENAL DISEASE

The group of cases included under this term presents a varied systematic picture. Dyspnea, continuous or paroxysmal, high arterial tension, a pallid (arteriosclerotic or nephritic) appearance, palpitations and sometimes substernal or precordial pain, sometimes edema of the extremities and effusions in the serous cavities, headaches, neuralgias and various cerebral disturbances, polyuria or reduction in the amount of urine, disturbances of vision, gastro-intestinal disorders and heaviness, stupor or even coma are among the prominent symptoms encountered. Physical examination discloses enlargement of the heart and evidences of cardiac weakness, sclerosis of the vessels, albuminuria and casts, in varying degrees of prominence. As the disease advances, increasing evidences of circulatory embarrassment on the one hand or of renal inadequacy on the other hand manifest themselves, and the terminal end may be quite clearly a circulatory or a renal death; but even up to the last there may be difficulty in determining the major fault. Particularly true is this in patients dying in coma when the possibilities of cerebral hemorrhage and uremia seem equally

balanced, and in cases of severe paroxysmal dyspnea. From the very beginning, however, the physician finds it necessary to make a decision and direct treatment accordingly.

In reaching this decision he will find value in considerations that may be classified under the following heads: the history; the cardiac physical signs taken in conjunction with the blood-pressure and urinary examinations; the functional renal tests; the nutritional condition of the patient; ophthalmic findings, and therapeutic tests.

THE HISTORY

Of the three groups of pathologic conditions comprised under the general heading of cardiorenal disease, that which most frequently presents a clinical history of value is the combination of valvular or myocardial disease with secondary nephritis. Here a long-standing cardiac weakness is indicated by the history of onset after some severe infection, by the early dyspnea, edema, palpitations, arrhythmia, etc., and by the discovery of marked physical signs of cardiac deficiency. Only in cases coming under observation late in the disease, in which marked evidences of nephritis have developed and in which the earlier clinical course is unknown, are the difficulties particularly great. Even such cases, however, present a sufficient predominance of indications of cardiac failure to emphasize the cardiac rôle in the clinical complex.

The difficulty is more decided in purely myocardial cases than in valvular disease. In the second and third groups of cases—those in which primary arterial disease has occasioned renal trouble or in which primary renal disease has initiated the whole series of lesions—the history is less significant. Sometimes, it is true, a history of renal trouble following an acute infection like scarlet fever, septicemia, pneumonia, or the like may stand out prominently; but much more often the beginning stages of nephritis are inconspicuous, and the history is entirely obscure. In the cases of primary arterial or arteriolar disease the onset and early course are so insidious that the history furnishes little clue to the nature of the disease. Formerly this group of cases was regarded as common and the picture drawn by Gull and Sutton of arteriocapillary fibrosis was accepted as adequate to explain many of the cases of cardiorenal disease which we are now considering. In more recent years the importance of renal disease as the initial cause of high arterial tension and of arteriosclerosis has been exaggerated to the practical exclusion of the older view. As usual the pendulum of opinion has swung too far, and there are abundant evidences that it is returning toward the older position.

If the pathologists and experimentalists have found it difficult to determine whether the renal or the vascular trouble is primary, how much more difficult is the clinician's task in forming an opinion of the relative significance of the two elements at a given time? The history of the cases can give only meager clues: sometimes the mode of life of the patient, his general appearance and the state of his blood-vessels taken in relation with the cardiac or renal conditions, a history of syphilis (especially in young cardiorenal patients) and other items of history, may furnish a certain amount of aid; but surer ground is reached when a study of the whole circulatory system is considered in relation with direct determinations of the renal function, with the urinary findings and with chemical examinations of the blood. These data will be discussed in succeeding paragraphs.

THE CARDIAC PHYSICAL SIGNS CONSIDERED IN CONJUNCTION WITH THE BLOOD-PRESSURE AND URINARY EXAMINATION

In Group 1, especially in valvular cases, cardiac enlargement and particularly enlargement toward the right is significant. The importance of this may be appreciated by contrasting a case of primary valvular disease marked by intense dyspnea with one of chronic interstitial nephritis attended by dyspnea. In the former right-sided enlargement, cyanosis, hepatic congestion and other indications of venous stasis direct attention to the heart; in the latter dyspnea is practically independent of weakness of the right heart, and right-sided enlargement is usually absent. Confusion is especially apt to occur when, as a result of renal hypertension, progressive enlargement of the left heart has finally occasioned mitral incompetency and a systolic murmur at the apex. Such cases are frequently regarded as purely valvular disease by those who overemphasize the significance of murmurs. In these cases the dyspnea (often quite paroxysmal), though primarily renal, may be in part cardiac. It is largely due to weakness of the left ventricle and to the sudden disproportion in the amount of blood thrown into the lungs by the right heart and that removed from the lesser circulation through the left side. Intense dyspnea of this type may be unaccompanied by any evidence of enlargement of the heart to the right.

A second point of importance in the physical examination is the character of the murmur heard over the heart. I am leaving out of consideration diastolic murmurs which are only rarely secondary to high arterial tension and renal disease, and wish to direct attention to the systolic apex-murmur that may be significant either of primary mitral regurgitation or of mitral incompetency secondary to high tension and left ventricular dilatation. In the latter case, I have quite commonly observed that the time and character of the systolic murmur differs greatly from that found in the former case. In primary mitral regurgitation, the systolic murmur always occurs in the early part of the systole, sometimes so early that it quite overshadows the first heart sound; while in the mitral leakage following continued high tension, the murmur is so late in systole that the first sound is heard an appreciable interval before the murmur and the second heart sound follows immediately after the murmur. Figure 1 will indicate the distinction. Not rarely in slow-acting hearts the lateness of the systolic murmur is at first confusing and suggests a diastolic murmur, but the second sound following immediately after it disproves this supposition. A late systolic murmur of this type is almost always significant of beginning cardiac failure in cases of hypertension. In a few instances I have found it in mitral valve disease. Perhaps it was this murmur to which Austin Flint called attention under the name of prediastolic murmur and which he regarded as due to the back flow of blood in an atheromatous aorta just preceding the closure of the aortic valve. In view of present knowledge this explanation is, of course, inadmissible, and I do not wish now to discuss the cause of the time relations of the murmur. The reference to Flint is made only to indicate that he had doubtless observed the same murmur under the circumstances now under discussion. It should be added that the systolic murmur heard when the heart begins to fail in cases of hypertension is not always of this late character. In many instances

it is precisely the same in time and quality as the murmur of primary mitral regurgitation.

Comparing blood-pressure with cardiac findings, the striking fact is the usual low tension in primary cardiac cases even when considerable renal disease has been superadded, and the reverse conditions in arteriolar and renal disease. In the latter conditions, even when terminal cardiac failure has advanced considerably, arterial tension is likely to remain high. It has often been said that the arterial pressure may be low in arteriosclerosis and renal disease, and without doubt there are many cases in which it falls as cardiac weakness increases. The reduction in tension, however, is often less real than apparent because too frequently the systolic pressure alone is considered. The clinician may be deceived by reductions of systolic pressure from 180 to 140, 130 or even lower figures, when he has not noted that the diastolic figure has remained quite constantly at 110 or 115. Such values of the diastolic pressure in cardiorenal cases are practically always significant of arteriolar or renal disease rather than of primary cardiac disorders.

The urinary findings in cases of primary cardiac disease contrast with those of primary renal disease mainly in their variability. When frequent examinations are made, the amount of albumin and the number of casts, red blood-cells or other cellular elements vary far more in the former than the latter, though without doubt considerable variations may occur in

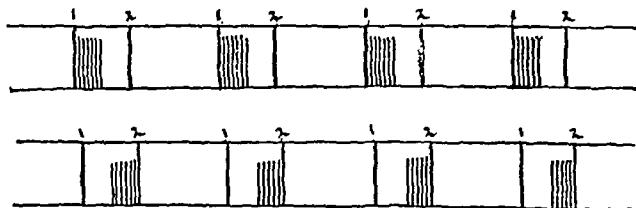


Fig. 1.—The upper figure represents the time relation of the systolic murmur of mitral regurgitation in disease of the mitral valve; the lower shows the time of the murmur (late-systolic) in cases of hypertension without valvular disease. The numbers 1 and 2 indicate the first and second heart sounds.

certain renal cases. However, no safe conclusion as to the relative importance of the cardiac or renal participation in the manifestations of cardiorenal disease can be drawn from the ordinary examinations of the urine. Just as the discovery of a systolic mitral murmur frequently leads to the erroneous impression that a case of nephritic hypertension with failing cardiac power is one of primary mitral disease, so the early discovery of albumin and casts may occasion the faulty diagnosis of primary nephritis in cases of valvular disease.

FUNCTIONAL RENAL TESTS

Among the functional tests in use at the present day are the following: the phlorizin test, the determination of the time relations and quantity of excretion of potassium iodid, sodium chlorid, milk-sugar, indigo-carmin and phenolsulphonephthalein. Each of these has certain advantages but I shall speak only of the last as my data regarding this are most abundant. The results obtained in cardiorenal disease are sometimes highly valuable, when due allowance is made for possible errors and for temporary variations in the degree of elimination. Among the causes of error one must consider especially the possibility of slow absorption in cases of edema and marked circulatory weakness, but with proper injection into the lumbar muscles this

error is only occasionally considerable. If the normal elimination in two hours is placed at from 50 to 60 per cent. of the total coloring matter injected, the figures for primary cardiac disease with secondary nephritis are only moderately reduced, the findings varying from 30 to 40 or 50 per cent.; in primary renal disease, especially in certain advanced types, the figures fall to 20, 15 and even to 10, 5 and finally in some cases for a considerable period before the fatal termination to 0. I find the test of less value in distinguishing primary nephritis from that secondary to cardiac weakness than in differentiating certain arteriolar cases from cases of primary chronic nephritis.

In making this statement, I must first of all admit that to a certain extent the claim to recognize primary arteriolar cases is an assumption; but clinicians will recall cases of continuous hypertension with excessive pressures varying from 200 to 300 systolic and from 120 to 150 diastolic, in which the physical signs indicate considerable diffuse arterial thickening (hard vessel-walls, increased substernal dulness, ophthalmic findings) and the symptoms are almost wholly those of hypertensive cardiac embarrassment. These cases

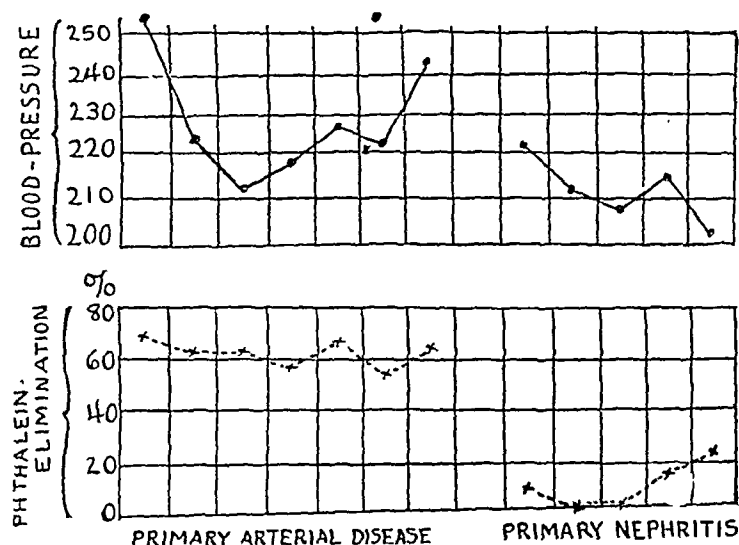


Fig. 2.—Seven typical cases of primary arterial disease with secondary nephritis and five cases of primary chronic nephritis are tabulated to show the hypertension in each group and the normal or excessive elimination in the former contrasted with the greatly reduced elimination in the latter.

may continue for years (six or eight under my observation in several) without any evidence of renal inadequacy.

Cases of this type occur in persons from 40 to 50 years old more frequently than in younger or older persons, and are more common in women than in men. The appearance of the patients contrasts sharply with that of cases of primary interstitial (or advanced types of parenchymatous) nephritis. They are frequently well nourished; often (especially women) somewhat fat; of fair color; the blood is usually normal in its hemoglobin content and the number of red corpuscles; there is little in the appearance of the patient to suggest grave illness. The non-coagulable nitrogen of the blood is within normal limits in these cases and not influenced by forced feeding with protein foods otherwise than in normal persons. The urinary examinations usually show mere traces of albumin and a few hyaline casts. The impressive facts are the continuous high arterial tension and the evidences of cardiovascular embarrassment and disease. Practically all of the cases which I have seen have been in the consulting room; there is little in the symptoms that I have recited

to occasion such patients to seek hospital treatment. In other days one would have with little hesitation described such cases as instances of the earlier stage of arteriosclerosis, but in recent times the tendency to ally continuous hypertension with renal disease has caused many to overemphasize the renal element which undoubtedly exists. In view of the appearance of such patients, their subsequent history (ending in cardiovascular death) and among the clinical findings the ophthalmoscopic picture and the results of study of elimination through the kidneys, one may, I feel, with reasonable certainty separate these cases from primary renal disease. The elimination as is shown in the chart is practically normal or above normal. This is so strikingly in contrast with the condition in primary nephritis that I have placed the findings in the two groups side by side (Fig. 2).

A contrast picture is furnished by primary nephritis not only in the matter of phenolsulphonephthalein elimination but also in the appearance of the patient and the entire clinical course. I have in mind here only cases of primary chronic interstitial nephritis and certain late forms of parenchymatous nephritis which cannot be differentiated during life. In these cases the patient is usually much younger, between 20 and 50 years; his color is sallow, pallid, often almost icteroid; he is apt to be emaciated, the tense and tortuous temporal and brachial vessels stand out strikingly (partly as a result of emaciation), the blood is distinctly (often excessively) anemic; gastro-intestinal disturbances are frequent and a heavy coating of tongue and heavy or even fetid breath are noticed; a somewhat urinous or uremic odor may be present for long periods before actual uremia occurs. The blood-pressure is as high as in the average of the other group but less frequently attains the highest figures obtained in such cases. The ophthalmic findings are in distinct contrast. While hemorrhages may occur in both, the picture of so-called albuminuric retinitis is not seen in the arteriolar cases. The dictum of ophthalmologists that nephritic patients with hemorrhagic retinitis rarely survive for more than two years is doubtless correct for cases of primary nephritis, but must not be extended to the other group. I have frequently found, in the latter, survival for several years and in one at least have known recurring attacks with improvements by absorption of the blood in the intervals, running over a period of thirty-one years. The patient eventually developed increasing evidences of the nephritic side of his malady, but nevertheless finally died a cardiovascular death. The phenolsulphonephthalein elimination in the primary nephritic cases is always markedly reduced and may be as low as 5 per cent. for long periods and sometimes may be nil for weeks before death. There is less frequently substernal dulness. Non-coagulable nitrogen in the blood customarily reaches high figures—from 70 to 80 and even 110 or 120 mg. per hundred cubic centimeters.

The terminal symptoms of these cases (Group 3) are very different from those in the arteriolar cases. Increasing headaches and disturbances of vision, recurring attacks of vomiting and finally pronounced uremia terminate the condition, commonly before the age when the other form of disease becomes manifest.

OBSERVATIONS OF THE QUANTITY OF THE URINE AND OF ITS PHYSICAL CHARACTER

These are important aids in the recognition of the type of cardiorenal disease. In the primary cardiac

group the urine is almost always scanty and, in consequence, of higher color and specific gravity than normal.

The variability of the chemical and microscopic findings has been mentioned, but it may be added that the urinary output and the character of the urine are closely dependent on the condition of the circulation from time to time. The renal element in these cases manifestly influences the condition of the urine far less than the cardiac and circulatory. In arteriolar cases considerable polyuria is a frequent but by no means constant condition—even when blood-pressure is enormous. The urinary findings are variable from time to time. Traces of albumin may occur at times and vanish at other examinations, tube casts are scanty as a rule and may frequently be absent. In other cases, constant albuminuria and cylindruria may be noted. One distinction in the urinary output and findings of this type of cases that has impressed itself on me is the variability in the urine of the day and night. More frequently than in primary nephritis the quantity of the night urine is greatly in excess of that passed during the day, and the specific gravity is considerably lower. This contrast in the night and morning specimen of urine may be a clue to the condition present. Somewhat the same observation, but rarely so striking, may be made in cases of the primary cardiac group.

OPHTHALMIC FINDINGS

Sufficient has perhaps been said regarding the distinctions in the findings of the ophthalmoscope in primary arteriosclerotic versus nephritic cases. It may be added here that one feature common to both, hemorrhage, has been overemphasized. Too commonly this is regarded as synonymous with albuminuric retinitis and false deductions drawn. The discovery of marked arterial changes in the retinal vessels with or without hemorrhages should suggest a careful scrutiny of all the clinical features of the case to determine whether the nephritis is primary or secondary. Probably no single test applied to such cases exceeds a careful ophthalmoscopic examination in the reliability of the diagnostic and prognostic indications afforded by it.

THERAPEUTIC TESTS

Only the barest suggestions of the sort of information derivable from therapeutic tests need be made here; and it should be added that not too great a reliance should be placed on such data. In typical cases, however, of the three groups one may observe quite striking differences in the response to certain plans of treatment. The marked response of primary cardiac cases to digitalis and other cardiac tonics is sometimes fairly diagnostic in significance. Rarely ever does one see anything approaching this response in the other groups, even when second cardiac failure has become a marked feature. In the second group one finds the most satisfactory results from the diuretics of the caffen group. Rarely in other cases does one see the same enormous diuretic effect from caffen or theobromin salts. In the third group far more striking than in the other two diaphoresis—baths, pilocarpin, etc., sometimes yields satisfactory results. There are, of course, many intermediary cases in which therapeutic tests are confusing just as the clinical findings are of uncertain significance.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. BROOKS AND CARROLL, CABOT, AND STENGEL

DR. E. LIBMAN, New York: For some time past I have been classifying the more common cardiac lesions as follows: Two main groups of cases may occur alone or in combination. The first group is that of valvular disease, or valvular defect, and the second, endocarditis. The valvular defect may be due to the virus of rheumatism or of syphilis, or to atherosclerosis. The endocarditis may be acute, subacute, or chronic, and may occur in a previously normal valve or in a previously diseased valve. It may be due to the organism of rheumatism or it may be due to the various forms of streptococci, staphylococci, or other organisms. The subacute and chronic forms are practically always due either to the endocarditis coccus (so-called *Streptococcus viridans*) or rarely to the influenza bacillus. I have seen three cases of infection of a syphilitic valve by the endocarditis coccus (*Streptococcus viridans*). Taking Dr. Cabot's classification the prognosis in the various groups is, in general, as follows: In the group of valvular diseases due to rheumatism the outlook is governed by the degree of the lesion present, the condition of the heart-muscle, the mode of life of the patient, and the occurrence of various forms of endocarditis. In the syphilitic group the result will depend to a great extent on how much damage has been done before the patient comes under treatment, how much the coronary arteries are involved by the disease and what other lesions are present in the system. In the atherosclerotic group the prognosis depends to a great extent on the degree of loss of elasticity of the vessels and on the involvement of the coronary arteries, especially their orifices. In the nephritic group with hypertension, the prognosis again depends on the changes in the aorta and in the coronary arteries, the degree of the nephritis and the mode of life of the patient.

DR. S. SOLIS COHEN, Philadelphia: No subject was more neglected in the teachings of twenty-five years ago than etiologic diagnosis; nothing needs greater emphasis to-day. In my own classes I go a little further than Dr. Cabot has, not only with regard to the heart, but also with regard to the whole organism, to every form of disease and injury. I shall discuss, however, only the heart. Although we use the term diagnosis, this classification is important also in prognosis and in treatment. First we have the clinical diagnosis, let us say "cardiac decompensation." Then the anatomic diagnosis, let us say "mitral obstruction with insufficiency"—or "muscular disease," or "aortic" that is, "arterial disease." Here the distribution of the lesion is of great importance—as, for example, in Dr. Libman's illustration of involvement of the openings of the coronary arteries. Then comes the pathologic diagnosis. Have we a morbid process—intoxication or tissue change—in progress, or are we dealing only with its results? We must discriminate infection with its intoxication and affection with its progressive tissue changes from the resultant infirmity—the impairment, the deformity, the interference with function produced by the scar-tissue and adhesion and muscular degeneration which remain when toxemia, inflammation and all active processes are past. The etiologic diagnosis comes next—syphilis, rheumatism, typhoid, whatever it may be. Only when infection or affection still persists does the etiologic diagnosis affect treatment. If they have ceased, we have to remedy, if possible, structural and functional results, but we cannot do this by treatment which concerns the infecting agent only. It seems to be a fact that in syphilis, the infection does persist, and the affection—the progressive tissue change—does continue, almost indefinitely.

Dr. Brooks' paper on the syphilitic heart is thus highly important, in that it directs close attention to this often insidious and obscure form of cardiac disease. I would ask Dr. Cabot if, in continuing his valuable statistical studies, he will tell us something about the anatomic distribution in the syphilitic cases. I have been in the habit of teaching that the large majority of cases of "myopathic heart"—I don't like the term myocarditis, which means both too much and too little—are syphilitic in origin. Aortitis, too, is most fre-

be met with (providing there had been no kinks left above it), and yet, to my knowledge, in five cases in which this operation was done, a rapid transit through the lower part of the small intestine could be proved, but no benefit to the exit from the stomach and the passage through the first 15 inches of the small intestine. The delay shown by the Roentgen ray at these upper levels continued just the same after the implantation in every case but one, and in this but little benefit could be noticed.

Regarding the responsibility of intestinal stasis for ulceration of the duodenum and stomach, experience has proved that in most of the cases of ulcer met with there is no intestinal stasis, and that surgical procedures for the intestinal stasis do not cure the ulceration of the duodenum or stomach, or prevent the ulcer from returning if the case is of that type. If the ulceration was due to stasis, implantation would be needed in addition to the gastro-enterostomy or the ulcer would not heal or would return if a gastro-enterostomy only was performed. Yet we know that simple gastro-enterostomy answers for the vast majority of cases of these ulcers, no further surgery being necessary, showing that stasis is not an important factor in their etiology.

It has been my experience within the last year to meet people who have been "short-circuited," and who have been benefited thereby for a space of a few months, but who now present the identical symptoms of toxemia they had before they were operated on, although the connection between the ileum and lower sigmoid or rectum is perfectly patent. In two particularly interesting cases a colectomy was done in addition, and still they were toxic. There were three cases, one operated on by Mr. Lane himself, of ileac-implantation wherein the colon not only did not atrophy but was practically a dead space, or a large appendix to the sigmoid, as is the regular appendix a small one to the cecum. Cases were also met with in which cecosigmoidostomy had been performed for toxemia or stasis (not true obstruction) wherein the individuals were even more toxic than they had been before the operation, because of a vicious circle established in the colon.

There is also a question in my mind whether dilatation of the duodenum can always be taken as an indication of intestinal stasis, because while this may be common in cases of bands of the intestine, there are a number of cases in which dilatation of the duodenum exists without bands being present, or even of dilatation of the stomach. I have seen definite cases of dilatation of the duodenum in which the stomach was apparently normal, and I am convinced that by Roentgen-ray method of diagnosis a stomach may be dilated, but when the bismuth meal is given it looks normal in size, while the duodenum, through which the food rushes very quickly, and does not have much peristalsis to speak of, may still remain loose and flaccid.

The ordinary duodenum is 3 inches long, and according to Jordan, when it is 4 or 5 or 6 inches, it is significant of stasis due to kinks distal to it. This is difficult to believe, because in instances people who are not toxic and have no stasis, still have duodenums 4 and 5 inches in length. Jordan, as well as most others, takes the time standard of emptying the stomach and small and large intestine as significant for a diagnosis of surgical cases. I have already alluded to the inadvisability of diagnosing gastric

stasis by this means.¹ Of course here I refer to the gastric cases of moderate degree, not those due to definite pyloric obstruction with marked retention. I have noticed normal individuals in whom the function of the stomach and upper small intestine is slow while that below to the hepatic flexure is rapid, and perhaps slow again distal to this point. I have noticed others in whom the transit to the ascending colon in the usual six to eight hours was perfectly normal, and there being no obstruction in the colon, still it was a matter of seventy hours before the bismuth was gone. The stand that Jordan has taken that a sagged transverse colon, by causing a sharp angulation at the splenic flexure, is a cause of stasis is not borne out generally in practice. I have seen persons who have this sharp angulation who are not toxic and who do not have stasis.

The Roentgen-ray method of diagnosing intestinal stasis, while valuable and the best we have, is liable to fallacious conclusions. The misfortune was that when the medical men utilized the Roentgen ray in connection with diagnosis in the abdomen, as well as elsewhere in the body, they did not engage, as their first work, in examining normal individuals. They immediately began with abnormal subjects, and so it is that an unwarranted degree of enthusiasm developed conclusions which only time can modify on the part of all who utilize this means. If Jordan, as well as others, would examine a normal individual every third or fourth time, they would be surprised to find the number of people who have all the Roentgen-ray signs that have been held so important for these diagnoses. Of course, the proportion would not be so great as in ill people, but the number would be so considerable that many definite views held at present would be modified, as must inevitably happen with the proper application of this valuable means of diagnosis. Only a clinician who is engaged in all sides of the work, with the Roentgen ray as well as the laboratory, can appreciate the value and limitations of any one method of abdominal diagnosis. I again reiterate what I have said so many times in the last four years, namely, that we must go slow and be conservative in drawing definite conclusions from Roentgen-ray examination alone. It is the man behind the gun with a Roentgen-ray apparatus who is a far more important factor than energizers, tubes, screens, etc. It is its practical value for diagnosis that counts in the important way, and this is now mostly a matter of personal equation, learned in experience born of failures, both of omission as well as commission. A standardization of this means of diagnosis is absolutely necessary before it can be generally good for the patient and medical men.

The Roentgen-ray method is at present as fallacious in diagnosing intestinal stasis as it is useful when true obstruction exists. I am taking here its consideration from a surgical aspect. Gastric stasis is more often due to other conditions besides kinks than Lane would have us believe. It is surprising in my own Roentgen-ray work how often retention of barium in the stomach for six hours is met with. As my experience multiplies, I am paying less and less attention to this means of diagnosing gastric stasis, so that now, with Mayo, I believe in the test-meal method mostly. Almost every case of abdominal disturbance has this Roentgen-ray finding of gastric

1. Bassler, A.: Some Recent Conclusions On Abdominal Roentgen-Ray Work, THE JOURNAL A. M. A., Dec. 20, 1913, p. 2217.

stagnation, and a diagnosis of gastric stasis or dilatation by means of the Roentgen ray simply should not be made, because however atonic or dilated a stomach might be, provided there is no actual obstruction at the pylorus, it usually contracts on the Roentgen-ray meal and appears to be a much smaller organ than when empty. More than that, I have seen individual cases in which at one time the stomach was dilated, at the next time normal, then dilated (possibly because of some indiscretion in eating), and perhaps normal again after a few days' time.

Mr. Lane does not take into consideration the bacteriology of the intestinal canal, its secretions from the gastric portions down, the motility of the tract that is an ever-changing matter, the habits and age of the individual, diet, condition of the abdominal walls, and many other factors which bring on the condition in a secondary or markedly influencing way. To him and his followers it is only a mechanical matter in cause, diagnosis and treatment. For years and quite generally in its application to the body, drainage has been a real and true standard of surgery. The second and other great one is extirpation of diseased tissue. For the subject on hand, he advances drainage as a cure, and lately extirpation (colectomy following ileac-implantation) because the first was not enough to prevent failures. But the subject is mostly a biologic matter, and to that standard surgery has not advanced as yet. The two time honored methods not being enough to sustain Lane and his followers in all of their contentions, when the patient who has been operated on does not do well they resort to medical measures and prescribe paraffin, belts, diets, marriage, and rest in the country. The employment of these means is fair neither to the advance of the surgery on the subject, nor to the old and better known medical side. The majority of these patients are debilitated, neurotic and low in health. These he puts to bed and purges for the operation, there is the low diet for several days that must follow all laparotomies, then comes the three or more weeks bed rest of the body and building up generally because of no expenditures in physical or nervous energies. Added then is the moral effect of the operation in these more or less psychic sufferers. Every surgeon makes use of these remedial measures for any laparotomy case, but they are especially effective when one deals in large numbers with patients of the kind Lane and his followers are operating on, and due credit for their relief must be given to these really medical means. This Lane does not do. No one has involved the subject more than Lane and his followers themselves. To state "Many forms of medical treatment had been tried in the case but she grew gradually worse, operated on and she is cured," means little. What treatments, and by whom, and for how long a time? This information is not given. The truth is that there are very few medical men who properly diagnose and treat the marked cases. The subject is so little understood generally in medicine, and there is so much for medicine still to find out in the biology of the subject, that such phrases are uttered for personal reasons or because of lack of knowledge. Particularly does this come home irritatingly to us when "cured cases" come under medical attention again after having passed through the route of dangerous surgery and contributed to flattering surgical statistics.

Mr. Lane reports that cancer of the pancreas and stomach is due to intestinal stasis, and yet he fails to

account for those cases of cancer at these points that do not have and never have had intestinal stasis. What is still more difficult to understand is his repeated statement that the ileum is normally sterile of bacteria, when the fact is that bacteria are more numerous and active in the lower part of the ileum than in the colon. And further, if he would make bacteriologic observations to prove it, he would find that in the newly-born the duodenum is sterile of bacteria, but as age advances bacteria creep up to it, although the complete intestinal flora is never found here or in the stomach in any individual.

Finally, the following important observation and experience of mine should be recorded. Of several hundred patients who have had intestinal stasis, the kinks Lane has described, and whose symptoms are due to the complexity of forms of these conditions, none has been operated on for functional stasis and all show results as good as Lane has reported. Some have been operated on who had definite obstruction; not the slight form with toxemia and stasis such as the average case displays. These had chronic appendicitis, binding adhesions in some area, gall-bladder pathology, etc. They are well or improved—everyone. Often there were cases of true obstruction from binding pericolic adhesions, who got well or were much improved whatever the form of operation by which they were short-circuited, providing it was practical. Everyone has agreed that for years surgery was indicated in them, and they always will be cases for which surgery is definitely called for. But when surgery of the intestines is engaged in to do away with food-bacterial poisons, without considering carefully the many factors that influence them, or even the kinds of organisms, then the cases that come back into medical hands several months after the operation as bad as before, prove the fallacy of bands being important and the inaccuracy of many of Lane's contentions. Lane and his followers have confused the terms toxemia and stasis so badly that it is difficult to understand the difference between them. The future will prove that mechanical stasis from a surgical point of view will mean obstruction real and *bona fide*, not just toxemia and moderate degrees of retardation of transit. Many surgeons attribute stasis even to hypertrophy of the Houston valves, mobility of the cecum, redundant sigmoids, Jackson's membrane, etc., but the reasons given are not any more convincing, and my experience and beliefs are that these are also cast in the quicksand of short-sighted surgery. Remember, please, that the bowel may be matted into one mass by chronic peritonitis so that great interference with peristalsis must exist, and still intestinal toxemia may not be present and even intestinal obstruction may be absent. Although it is well known that some of the cases of true intestinal obstruction in a chronic way lead to toxemia, the matter is still not proved when one notes non-toxic cases with the same kinds of obstruction. The coexistence of two phenomena does not always prove that they stand in the relation of cause and effect. The point I would definitely make is this: for toxemia alone, non-mechanical in origin or complication, operation is not indicated; but when distinct retardation to transit exists (and by this I do not mean bands whose influence is negative on simple prone position, but real, true obstruction in any position), operation may be indicated if wise, energetic

and long enough treatment does not satisfy the patient. Lane reports that 5 per cent. of cases seen by him are operated on. My belief is that they should be fewer than this, since only true mechanical reasons warrant surgery being performed. A considerable number of toxemia cases are relieved by operations (those having only kinks), but we do not cure them permanently of the toxemia in by far the largest percentage of instances. Then again, great harm is often done by these operations, seriously interfering with the physiology and biology of digestion, which cases are multiplying. The only true, safe standard in this whole affair is to operate when obstruction from whatever reason exists, and for surgeons to pay no attention to the toxemia or what may be called Lane's type of stasis. In this way the surgeon will be doing what is necessary in the case, the solution of many obscure points will be quickly cleared up on a practical basis, he will make no mistake in the selection of his cases, and his statistics and results will be uniformly good. There is so much variety in these cases that unless he operates on a kink case only when proximal dilatation of the viscera exists, and this patient has been handled carefully and capably for a while without benefit, he will meet with failures. It is best for him to operate only for intestinal obstruction pure and simple, and to pay no attention to stasis, toxemia, Jackson's membrane, Lane's kinks, etc. These may be the factors of cause, but obstruction, whatever the cause, should be his guiding star for activity, and pardon is asked for recapitulating this point.

THEORY OF KELLOGG AND CASE

Included in the work of Lane, these authors add torsions of the cecum and colon and particularly insufficiency of the ileocecal valve, permitting ileal stasis to occur by reflux from the colon. Mention is made of ileums noted that were so dilated that the ileum practically helped in adding a length to the colon. Reports are given of a large number of cases of ileal stasis in which this incompetence of the valve or spasm of the ileocecal sphincteric mechanism, or a combination of the two, was the cause. Substantiation of the theory is given in cases improved by operation on the valve, benefit in its mechanism noted after operation, and the fact that Rieder, Groedel and Diellen have reported instances of this condition.

No one can question that incompetence of the ileocecal valve is a clinical finding in some of these cases, and that apparently it is plausible that it has its significance in connection with the subject, but what must also be remembered is that in most every case of incompetence we are only dealing with a resulting condition, and while operation will help for the time being, the end results will not be as bright as Kellogg and Case have presented them.

Persons are met with in whom the ileocecal valve is not constantly relaxed as Case has stated. Even without treatment of any kind, I have observed four cases in which influx from the colon was noted at one time and not at another. A careful study of this valve has strongly suggested to me that distinctly more knowledge of its function than is at present in our possession is necessary before we can accept Kellogg's and Case's beliefs in connection with this subject. My observations regarding it have been made entirely with the Roentgen-ray method of examination and this being the same as Case's (although per-

haps not so extensive or intensive in interest as his) has led me to the belief that it is not of so much significance in each instance. Much depends on the general condition of relaxation of the hollow viscera of the abdomen, for when this is present the incompetence is liable to be present also, and I fail to understand how operation on the valve will afford permanent benefit. A careful study of the function of this valve shows that at times its relaxation, permitting influx from the colon, is a normal phenomenon. In almost every individual in whom the general status of nutrition is very low, enemas sufficient in bulk will reach the ileum, the valve relaxing for the passage of liquids upward from the colon. Following an operation, or for whatever reason, if food by mouth has been withheld for days, influx through the valve is common, it being an effort on the part of nature to obtain better nutrition.

By the clysma method of Roentgen-ray examination of the colon it is most important what bulk of suspension is given. If this is considerable in quantity, influx through the valve is liable to occur. Judging from the picture that Case shows, he fills the colon almost to its capacity. Another thing, and this is very important, in a considerable number of people who have been habitually constipated for years, constant relaxation of this valve is due to the gas pressure more or less resident on the distal side of the cecum. It may be supposed that this pressure would serve to keep the valve closed, and probably it does in the early days of disorder, but eventually the valve is dilated by it, and then it is more or less relaxed constantly (constipation here is the main cause). But here it is often difficult to state definitely, when toxemia is also present, whether it is the constipation or the toxemia that acts mainly. Careful post-mortem work in these cases will far too often show a degeneration in the sympathetic nerves coming from the valve and the centers that preside over them for the general acceptance of the Kellogg and Case theory.

AUTHOR'S THEORY OF THESE DISORDERS

Whatever Adami has said to the contrary, it is nevertheless true that infections of the intestinal contents are the primary factors of greatest importance in connection with toxemia of the alimentary tract. If one would examine bacteriologically a number of stools of these patients and compare them with normal individuals, significance would at once be noted. This is far too large a subject to present in detail here and Herter and Kendall's published works will supply enough to guide one in the beginning. The primary cause of these conditions is mostly a bacterial matter, and it is the food-bacterial products that eventually bring about the status which surgeons are endeavoring to remove by drainage, but which cannot be done successfully enough because the infections commonly continue after the operations.

The course of these cases is about as follows: Early in life the intestinal canal is infected from food and drink. The infecting organism acquires the power of symbiosis so that it becomes more or less permanently established in greater or less abundance. As middle life comes on, the vicissitudes of the individual, his habits and dietetic indiscretions, his artificial existence in the cities and even elsewhere, bring their train of added factors which influence the bacterial development unfavorably to him. The constant resorption of bacterial products affects the tissues nearest

to them, namely the walls of the gut. Errors in the secretions of the pancreas, the intestine (succus entericus), the liver (bile), the stomach, etc., are first to take place, and following this the musculature is weakened by a protoplasmic and nuclearplasmic degeneration in the fibers, both coats being involved. Gradually, a degeneration of the sympathetic fibers takes place, and as this extends, the ganglia are involved, showing a granular degeneration and shrinking of this highly specialized tissue. When this is established completely enough, the hollow viscus dilates and elongates, for the inhibitory power of the sympathetic system is assailed. Then usually, all the hollow viscera of the abdomen show this change, although certain parts like the stomach, small intestine, cecum, colon, sigmoid or rectum may show it to a greater degree. After this, the less immunized tissues of the body (those distant from the abdomen) show its influence on them and we have the picture of an individual we so often see in practice. As local resistance of the gut wall is assailed, the bacteria may gain entrance into the general blood-stream, and, filtering out in remote tissue, proliferate there with the production of local pathologic change.

To me, then, the subject is a medical matter all the way through. Surgical procedures for conditions that come on as complications may be necessary in individual cases, but never the major surgical operations of Lane for simple stasis or toxemia, or his form of abdominal operation for disease in tissues remote from the abdomen, or operations on the ileocecal valve itself.

SUBSCAPULAR EXOSTOSIS WITH ADVENTITIOUS BURSA

CLARENCE A. McWILLIAMS, M.D., NEW YORK

A girl, aged 18, came to my office in the early part of last August complaining of dull, aching pains in the left shoulder, increased by wet weather and by use. The pain seemed to run down irregularly through the deltoid muscle and varied much in intensity, duration and frequency. It was never a completely disabling pain. It had been present for about a year and was getting worse. Twelve years ago, following a fall, the left scapula began to become prominent. For this she wore a brace for a year but without any benefit. The projection of the scapula backward is increasing. Just inside the posterior edge of the left scapula a swelling has appeared, varying in size from time to time, but never larger than a lemon. No redness appears over the swelling, which is very slightly tender. Motions of the shoulder itself are painless and unrestricted. The drawing of the scapula backward and forward is slightly painful and for a year the patient has noticed on attempting this motion a grating or creaking sound.

A few months ago the patient went to one of our best hospitals where they inserted aspirating needles into the swelling on the inside of the scapula in several places, with negative findings. She was sent away without any roentgenograms being taken. This was a mistake, for if it had been done, a diagnosis would at once have been made.

Examination.—When the patient was examined, it was at once seen that the posterior edge of the left scapula was very prominent. There was no depression on its inner side as would be the case were the muscles atrophied from paralysis. Instead there was a fulness at the lower part of the posterior edge of the scapula. The color of the skin in this location was normal. Palpation revealed an indefinite, soft, doughy swelling of about the size of a lemon, the edges of which could not be mapped out. There seemed to be a sense of fluctuation in it. It appeared as though it ran forward

beneath the scapula. The feeling was as though a cyst was present beneath the scapula. A roentgenogram was taken, which at once explained the condition. An exostosis (Fig. 1) on the inner side of the lower part of the left scapula was surrounded by an adventitious bursa.

Operation.—Aug. 12, 1914, a transverse incision was made about $1\frac{1}{2}$ inches above the inferior spine of the scapula. It was made transverse so as to afford as little deformity as possible when a low-cut dress was worn. The trapezius fibers were separated in their direction and the rhomboid was divided. Under its surface a thin-walled cyst was found. In the attempt to enucleate this it was ruptured. It

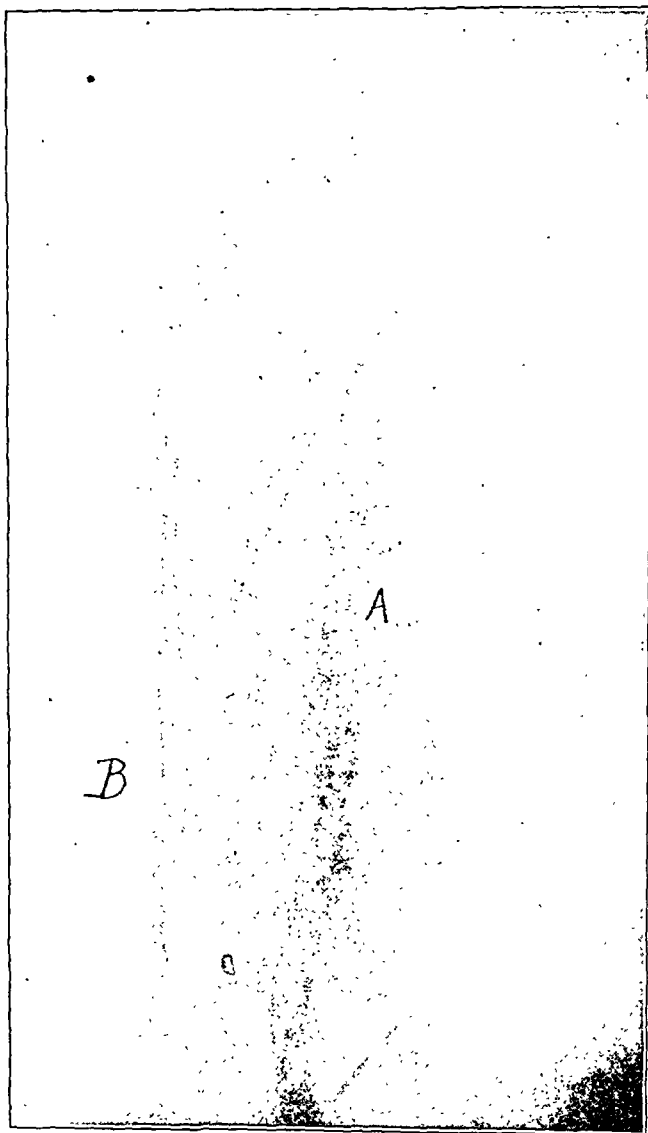


Fig. 1.—Roentgenogram of inner surface of scapula. A, B, exostosis. A is free end of exostosis covered by shadow of rib.

contained serous fluid. The finger inserted came on an exostosis which began about 1 inch from the posterior border and ran obliquely forward and inward. With a chisel it was an easy matter to divide the narrow pedicle at its base. This pedicle was much narrower at its base than at its distal extremity, as shown in Figure 2. The end of the exostosis was irregularly rough. The chest-wall on which the exostosis impinged was very rough and covered with thickened, hard, connective tissue. The bursal wall was dissected out as far as possible, and, in order to obliterate any of the wall which might have been accidentally left, the space was packed with dry, sterile gauze. Separate suture of the muscular layers was made about the gauze.

Pathologic Examination (By Dr. Whipple).—Gross examination: There are two specimens. The first is an oval-shaped piece of bone, measuring 2.05 cm. in one diameter by 2 cm. in the other, and about 1.05 cm. in thickness. Covering it is an irregular patchy area of cartilage which is fairly smooth, with irregular edges. Considerable resistance is encountered on section. The second specimen appears to be the remains of a cyst, covering the exostosis. The cyst-wall is markedly thickened and the inner edges show a considerable amount of infiltrated blood.

Microscopic examination: The sections taken through the exuberant growth of the scapula show that the tissue is made up partly of cartilage and partly of bone. The interesting

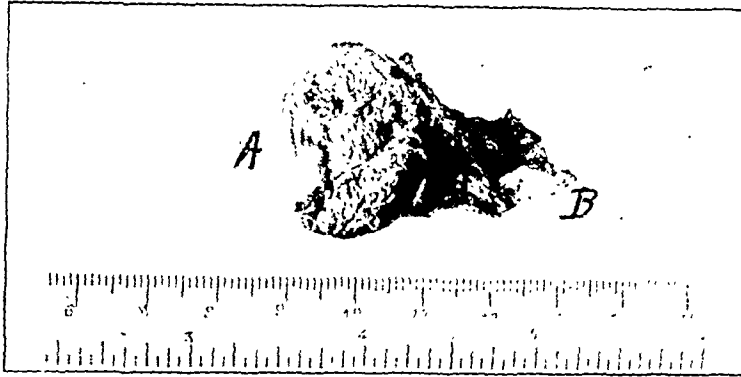


Fig. 2.—Appearance of exostosis after removal. A, free end; B, pedicle.

feature of the section is the picture of metaplasia occurring from cartilage to bone. Covering the cartilage in places is, apparently, a thin layer of fibrous tissue. The sections from the cyst which covered the exostosis show an unusual picture of adventitious bursa, in which the cyst-wall is made up of fairly dense fibrous tissue and the lining of modified connective-tissue cells, the innermost cells being fairly parallel to the surface of the cyst. Diagnosis: exostosis of the scapula with adventitious bursa.

The wound healed by primary union. Two weeks elapsed before the gauze was loose enough to remove. Two months after the operation the appearance of the shoulder is perfectly normal, the scapula having resumed its normal position. The grating sound has disappeared and all motions are painless. This case illustrates the great debt we owe to the Roentgen ray in assisting us with our diagnoses.

32 East Fifty-Third Street.

Harness Rivets Removed from Nasal Cavity.—While we frequently remove from the nasal cavity foreign bodies which have been retained a short time, yet it is rare to find them retained so long without the patient knowing it. A boy, aged 7, had always been healthy until two years ago when he had an attack of "influenza" lasting several days, at which time there was quite a profuse nasal secretion of a thin, watery nature; the general disorder which had been diagnosed influenza subsided, but the nasal discharge gradually got worse until it became purulent and very foul; nasal douching had little effect; "even the skill of the magnetic healer failed to effect a cure." I first saw the child September 20. He was moderately well nourished, was somewhat anemic and presented the appearance of a child with adenoids. A purulent discharge from the nose was very foul. Careful examination revealed a metallic body in each nasal cavity. These were removed with some difficulty and proved to be quarter-inch harness rivets. They were considerably corroded, showing that they had been in place a long time. A few subsequent treatments cleared up the trouble nicely and the boy is now able to breath through the natural route. This simply emphasizes the necessity of a careful examination of the nasal cavity and all accessory sinuses in every case presenting with a foul nasal discharge.—A. J. DALTON, M.D., St. Joseph, Ill.

New Instruments and Suggestions

NITROUS OXID-OXYGEN ANESTHESIA

A NEW APPARATUS*

ALBERT H. MILLER, M.D., PROVIDENCE, R. I.

Requirements.—The nitrous oxid-oxygen apparatus used for surgical anesthesia should be simple, portable and readily sterilized.

Simplicity.—Although simple, it must conform to the requirements set by Boothby¹ as follows: (a) an absolutely regular flow of each gas at any rate desired, without the necessity of frequent manipulation of valves; (b) the flow of gases rendered visible; (c) an efficient means of adding ether vapor to any amount; (d) a face-piece air-tight and practically self-retaining.

Portability.—Its portability should be such that it may readily be moved from room to room, or taken in an automobile or railway carriage.

Sterilization.—The sterilization of apparatus for administering anesthetics has been generally neglected. It is evidently wrong to continue to use an apparatus which has been contaminated by use in a case of scarlet fever or tuberculosis. Syphilis could undoubtedly be transmitted by an unclean gas inhaler. No apparatus previously described can be readily sterilized and in most, sterilization would be impossible without destroying the instrument.

Apparatus.—The apparatus here described comprises three units: (1) the reducing valves; (2) the controlling valves; (3) the inhaler.

Reducing Valves.—To secure a steady flow of gas and oxygen, reducing valves are essential. These valves reduce the pressure of 900 to 1,500 pounds per square inch as the gases issue from the cylinders, to a readily controlled working pressure of 10 to 20 pounds. Without reducing valves, constant attention is required to maintain even an approximately regular flow of gas. The reducing valves, one for nitrous oxid and one for oxygen, are mounted on double yokes fitted with fiber washers. Two cylinders of gas and two of oxygen, clamped into their yokes, set on the floor,

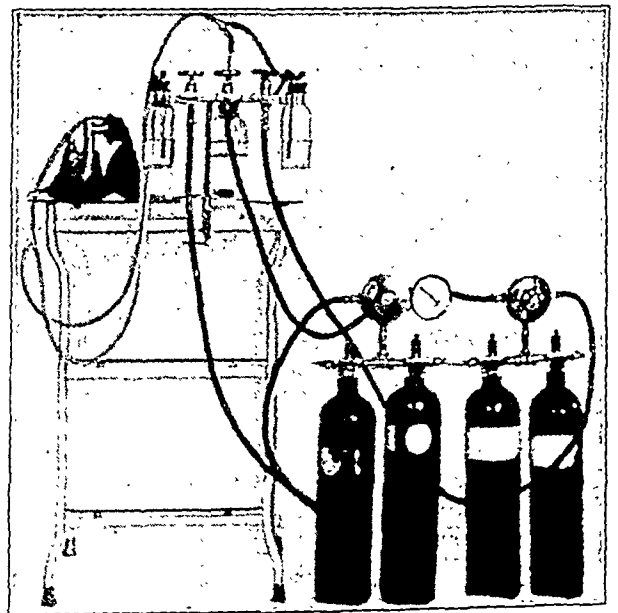


Fig. 1.—Complete apparatus. From left to right: Inhaler, air valve closed. Indicator for oxygen. Oxygen valve. Ether valve and ether vaporizer. Gas valve. Indicator for gas. Oxygen cylinders and reducing valve. Nitrous oxid cylinders and reducing valve.

not requiring any other support. By providing two cylinders of each gas, one is able not only to insure a sufficient supply of the gases for a long operation, but to allow each cylinder to be emptied before a fresh one is opened.

Controlling Valves.—The aluminum frame holding the controlling valves and the indicators is provided with a clamp

* Abstract of a paper read before the Rhode Island Medical Society, Surgical Section, April 8, 1914.

1. Cotton and Boothby: Perfected Apparatus for Administration of Nitrous Oxid-Oxygen-Ether Anesthesia, Surg., Gynec. and Obst., September, 1912.

which attaches this part of the apparatus to a table or chair, again doing away with the need of a stand. On the frame are mounted, three valves, two wash bottles and a vaporizer of special construction. Oxygen passes through the valve and wash bottle on the left and nitrous oxid through the valve and wash bottle on the right. The wash bottles, besides moistening the gas, serve as indicators of the rate of flow. The middle valve transmits a stream of nitrous oxid to the vaporizer which provides a constant percentage of ether vapor varied by changing the rate of flow of the gas. In other apparatus, ether has been added by an auto-

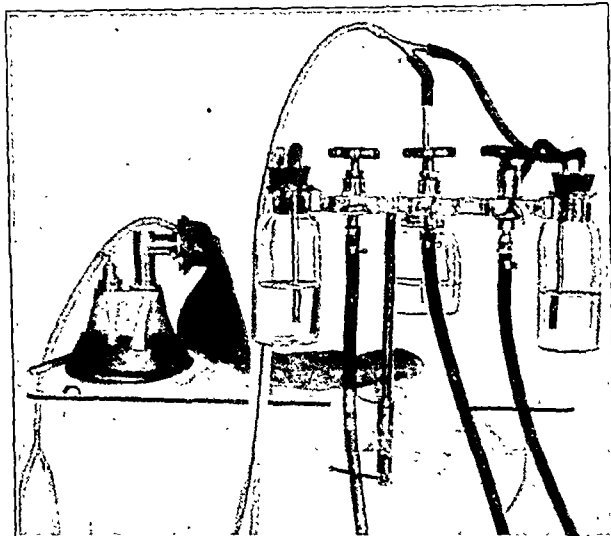


Fig. 2.—Inhaler and valve frame. From left to right: Inhaler, air valve closed. Indicator for oxygen. Oxygen valve. Ether valve and ether vaporizer. Gas valve. Indicator for gas. Wide mouth of bag allows ready sterilization. Aluminum valve frame clamped to table.

matic dropper or by passing the mixture of gases over ether in a jar. In neither of these ways can be obtained the constant, yet instantly variable, percentage of ether vapor which this instrument furnishes.

Inhaler.—The face mask is of celluloid, which is light in weight, readily sterilized and allows one to see the color of the face and lips or to note the presence of mucus or vomitus. The rubber cushion is inflated, fits any face, and is readily sterilized in boiling water. An air-valve on the inhaler allows the face-piece to be adjusted to the face and the patient to become accustomed to breathing through it before the anesthetic is introduced. When the air-valve is open, the gas is shut off.

The expiratory valve is mounted on the inhaler in plain sight. It is controlled by a spring which is adjustable in tension. There are no concealed valves in any part of the inhaler.

The supply-bag, which also serves for the rebreathing-bag, is mounted on the inhaler. The wide mouth of this bag allows it to be turned inside out and dried after sterilization in boiling water.

Rebreathing.—Only that part of the inspired air which penetrates deep into the lungs is changed during respiration. Without rebreathing, a large part of the gas which is used serves only to fill the inhaler and the upper respiratory passages and is then passed out into the room to be entirely wasted, so far as serving as an anesthetic is concerned. A small proportion of rebreathing serves only to warm the mixture and to prevent the waste of gas and oxygen. A larger proportion of rebreathing stimulates the pulse and respiration and raises the blood-pressure.

In this apparatus, the first part of each expiration passes into the supply-bag. The latter part escapes into the room through the expiratory valve. The proportion of each expiration which enters the supply-bag to be rebreathed is controlled by the rate of flow of the mixture into the inhaler. The proportion of rebreathing can be closely estimated by noting the point of the expiration at which the expiratory valve opens.

If the rebreathing bag were connected with the inhaler by 4 feet of $\frac{7}{8}$ -inch tubing, as is usually done, the expiration would fill only the tube and would never reach the rebreathing-bag. The patient would breathe over and over

the gas in the tube and all calculation of the proportion of rebreathing would be destroyed.

Connection of the Units.—The three units of the apparatus are connected together in the order named by rubber tubing. Each unit may be moved independently of the others. The nitrous oxid or nitrous oxid with ether vapor and the oxygen are led to the inhaler by separate tubes. The mixture takes place close to the face-piece. This allows an instantaneous change in the percentage of oxygen. Otherwise the patient would have to inspire all the gas in a 4-foot tube, an 8-gallon bag, a cumbersome heater and an ether-chamber before a change in the oxygen percentage could be appreciated. In some apparatus, it takes more than two minutes to effect a change in the percentage.

Administration.—The supply bag is partly filled with nitrous oxid. The face-piece, with the air-valve open, is adjusted to the patient's face. Bearded faces have the beard smeared with vaselin to secure an air-tight apposition of the face-piece. As soon as the patient is breathing easily through the inhaler, the air-valve is closed and the nitrous oxid controlling valve is opened, allowing a steady stream of gas to enter the supply-bag. The patient breathes pure nitrous oxid until anesthesia is established. A small proportion of oxygen is then added and this is increased until it reaches from 5 to 50 per cent. of the amount of nitrous oxid. A large proportion of oxygen is necessary in some cases of anemia. The depth of anesthesia is controlled by the proportion of oxygen in the mixture, a small amount of oxygen producing deeper anesthesia. At all times a sufficient amount of oxygen to prevent cyanosis must be used.

The proportion of rebreathing is controlled by the rate of flow of the mixture of gases, a more rapid flow corresponding to a smaller proportion of rebreathing. When the controlling valves are closed, rebreathing is complete, or 100 per cent.

When ether is not contra-indicated, a small amount may be used to secure relaxation. The flow of ether vapor is perfectly controlled by the middle controlling valve. When ether is used, the proportion of oxygen to nitrous oxid must be increased.

Result.—Recovery from nitrous oxid-oxygen anesthesia is immediate. The immediate recovery and freedom from after effects leave patient and friends, surgeon and anesthetist in

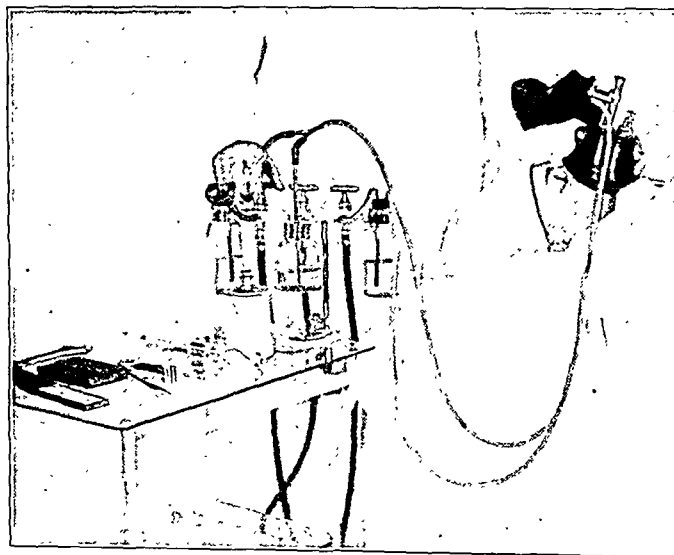


Fig. 3.—Administration. Inhaler applied to face. Air valve open. Hand of administrator opening gas valve. Note gas, ether, and oxygen valves close to administrator's hand.

a happy mental condition, in marked contrast to the protracted worry which follows the administration of other anesthetics.

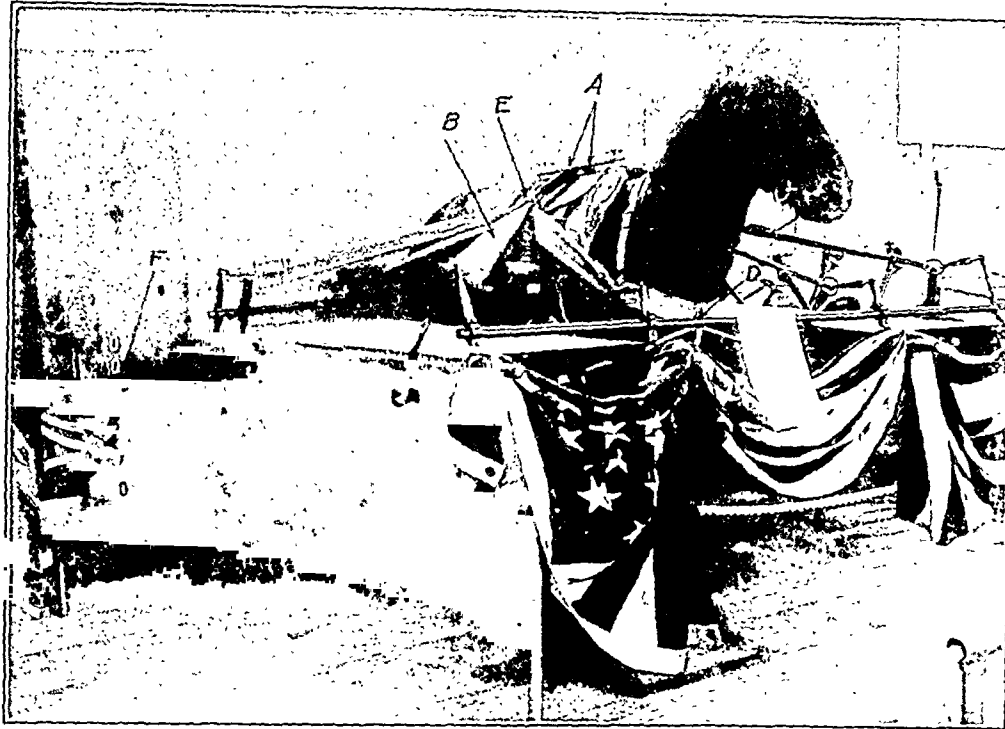
279 Benefit Street.

Cancer as a Preventable Disease.—Cancer may almost be classed as a preventable disease; cure is always possible if the disease is arrested before it begins. Procrastination has killed more patients than the surgeon's knife.—Raymond C. Turck, in *Jour. Florida Med. Assn.*

A SHOCKLESS HORSE-LITTER FOR TRANSPORTATION OF THE WOUNDED

WILLIAM J. MANNING, M.D., WASHINGTON, D. C.
Medical Officer, Government Printing Office

The horse-litter shown in the illustration is intended to be utilized in case of war and in territory in which it is not possible to use an ambulance on account of rocky or uneven ground. It was designed and built by me for the Red Cross. Advantage has been taken of the old method of overcoming



Shockless horse-litter, and ready-made splint.

gravity, utilized largely in country districts, in carrying two pails of water on a hoop, the stretchers in the present instance being conveyed in a similar manner.

The contrivance can be made very readily by the regimental farrier from equipment carried for other purposes with the army, and may be attached to any pack-saddle. The salient points in connection with the invention are:

1. Relief from shock and jar ordinarily experienced by wounded persons placed on horseback.
2. Economy in construction and in the use of animals for transportation of the wounded and disabled.

DESCRIPTION

A. Heavy iron springs resilient at pressure-weight of 175 pounds placed on each side of the back of animal, and attached to top of framework of saddle by a steel bar.

B. Canvas straps attached to iron triangle, and ends of stretcher handles.

C. Brace-straps running at right angles from outside stirrup or iron leg of each stretcher to its inner distal mate on other side of horse, and secured by a half hitch to cinch under belly of animal to prevent abnormal movement, or swing.

D. Carter's pin that releases or breaks sectional half of frame iron rod to permit easy loading and unloading of stretchers from sides of horse, the stretcher bearers on reaching camp simply placing themselves at the head and foot of litter, and with an upward movement the stretcher with contained body is unhooked from strap hook on triangle (E).

At side of model shown is a ready-made splint for utilization when limbs are fractured, or need immobilization, and the carrier is without splints. The wounded soldier's coat is removed, folded and placed beneath his leg, and lateral rolls (FF) made to come in contact with outer and inner aspect of leg. The soldier's bayonet-knife (G) and sheath (G) are then placed on each side of coat-roll, and his belt or suspenders (H) are finally removed and made to serve as laces over side of stretcher, and through slits made in canvas cover of stretcher with a knife; or eyelets can be previously placed in position in the stretchers for utilization in such emergencies.

A NEW PERINEAL BOARD FOR USE IN PERINEAL PROSTATECTOMIES AND GENITO-URINARY AND RECTAL SURGERY

CARYL POTTER, M.D., ST. JOSEPH, MO.

An exaggerated dorsal position to obtain correct exposure of the perineal structures is insisted on by Young, who is the chief exponent of perineal prostatectomy in this country; but it is the one factor which has seemed to me to have been neglected by many men attempting the perineal operation. Usually the elevation of the hips has been effected by means of a sand bag and flexion of the thighs on the trunk produced by the uprights and foot-stirrups of the ordinary operating table.

Such makeshift exposure complicates the operation to such an extent that very few of the structures can be seen, many operators depending on their fingers and not on their eyes to locate the structures in the perineum. In one clinic I saw a prostate removed with the patient in the usual lithotomy position with little or no elevation of the hips, the legs supported by the ordinary uprights and stirrups of the operating table. With poor exposure damage is done to perineal tissues, the rectum is poorly retracted and often torn and the bladder seriously damaged. The popularity of the suprapubic operation with many men is probably due to inability to obtain proper exposure. Without it the perineal operation is often a bunglesome one; but with the exaggerated dorsal position, the Young operation is the ideal one, except in selected cases, provided the Young technic is closely followed.

Young uses the Halsted perineal board which consists of a flat board carrying shoulder pieces and wooden uprights for supporting the legs. A block underneath the board elevates the hips. With the idea of gaining an ideal exposure, comfort for the patient and simplicity of use it seemed to me that a board could be constructed differing materially from the Halsted board.



Fig. 1.—A, board, which may be placed on any table; 1, holes for receiving pegs on B; 2, shoulder supports; 3, curving of board to accommodate the fit of shoulder pieces. B, hip support for elevating perineum; 1, holes for receiving leg support; 2, leg support; 3, 4, grooves to fit curves in back and buttocks and to allow instruments, etc., to hang without coming into contact with table.

The device consists of two separate pieces, A and B, the parts of which are explained in the legend to Figure 1. Board A is 3 feet 8 inches long, the length from the head to the knee-break of an ordinary operating table. The patient is anesthetized. Then the hip support (B) is shoved underneath the back and fixed by underlying pegs to holes in the board 1, A. As soon as the buttocks are brought to the edge

of the hip support and the legs wrapped around the leg supports the shoulder pieces are locked so that the patient is held in the position desired. The uprights for the legs can be moved backward and forward according to the length of the patient's legs. Flexion at the knees under anesthesia is enough to keep the legs supported by the leg supports. Rarely is it necessary to wrap anything around the legs to hold them. With this device the perineum can be elevated to any position and an exaggerated dorsal position easily obtained.

In the cases in which this device has been used the advantages which have been noted are, (1) convenience of use with

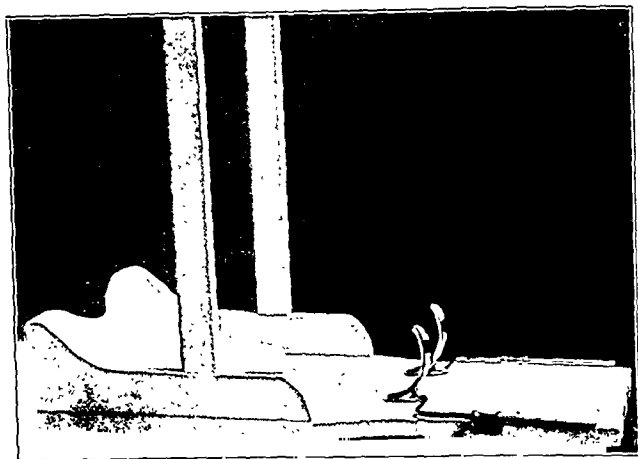


Fig. 2.—Lateral view with leg supports.

any table; (2) ease of manipulation, and (3) perfect exposure.

Proper exposure and strict adherence to the technic as advocated by Young make prostatectomy through the perineal route an ideal operation for enucleating enlarged



Fig. 3.—The hips are elevated, the back is bowed, the perineum is exposed and the patient fixed in this position.

prostates and for attacking malignancy in the prostatic gland. The feasibility of using the same device for other operations around the perineum and rectum is self-evident.

120 South Seventh Street.

Gun-Deafness.—During the Russo-Japanese war, among the 1,791 men who were wounded in the naval engagements there were 116 cases of concussion of the labyrinth and rupture and congestion of the tympanic membrane. The injuries are due to the sudden condensation or rarefaction of the error in the external auditory meatus.—Horne, *Lancet*.

Therapeutics

PREVENTION IS GREATER THAN CURE

(Continued from page 1393)

V

PREVENTION OF CONTAGION

Before disease can be prevented its source and its method of transmission must be known. This is too large a subject to treat here, but a brief summary of our present knowledge and of the objects aimed at will be of interest.

To the greater part of the United States, cholera, yellow fever, bubonic plague, some so-called malarial fevers, some dysenteries, and some other diseases, are practically foreign. The cholera bacillus reaches us in ships, and quarantine and governmental control takes this dread disease out of the hands of the individual practitioner. Suffice it to say that stool and urine disinfection, screening against flies, and boiling and using superheated plates and eating utensils, a supply of clean drinking-water and eating with clean hands are the key notes to the prevention of the infection of others. The prevention of dysentery and typhoid fever, both due to known germs, is not dissimilar. Yellow fever infects us by means of contaminated mosquitoes; hence, every case is a menace unless absolutely screened from these insects. The same is true of malarial fever. Bubonic plague is dispersed by the bite of fleas from infected rats. Governmental control of this disease when it entered San Francisco rapidly eradicated it by destroying the infected rats.

Typhus fever is spread by infected body-lice and at times by head-lice. Brill's disease is a form of typhus. The necessity of scrubbing and absolutely cleaning all places of close confinement and all individuals who are confined or about to be confined therein is self-evident.

It has long been known that certain diseases are contagious and transmitted from person to person, but it is only within recent years that the actual germs of disease have been discovered, and still more recently that in some instances the exact method of infection has been discovered. Formerly the contagious element was supposed to be carried in clothing, baggage, money, rags, etc., and to cause the disease when the innocent individual came in contact with such infected materials. In the case of scarlet fever it has until recently been believed that the desquamating skin, the epidermal scales, carried the infection. It has now been pretty thoroughly demonstrated that such is not the fact, that the infection of scarlet fever comes from discharges and secretions of the mucous membranes of the nose and throat and from ears that are suppurating from this disease.

It has been long known that the eruption of measles does not carry the contagion, but that the contagion is transmitted by means of the nose and throat secretions.

Theoretically, dirty money, especially paper currency, handled by all kinds of people and by people suffering from or in close contact with contagious diseases, should transmit disease; but it has not been found to do so. Bank men and treasury department men who handle large amounts of gold and dirty money do not contract disease. This does not excuse the disgusting practice of putting coins in the mouth,

or of wetting the fingers with the tongue in counting bills. Certainly, every individual who handles money should frequently wash his hands, especially before eating, and before handling food for the use of others.

Many kinds of bacteria have been found on stairways, balustrades, car straps and on money, but generally such bacteria have been found to be non-pathogenic. Such negative findings, however, and the lack of demonstration that disease is frequently transmitted by such methods, do not controvert the possibility that occasionally infection may be transmitted from one infected person directly to another by immediate contamination of some article. This possibility only emphasizes the necessity for the more or less strict isolation of infections, and the strict observance by an infected individual of the rules and regulations for the prevention of infection of others which are prescribed for the particular disease that he has.

The greatest factor in the spread of infection in any community or in any associated group is the germ carrier; and the more innocent the individual is of the fact that he is a carrier of pathogenic organisms, the greater the danger to the people who surround him. Therefore, in every epidemic, carriers should be sought for and when discovered should be isolated and treated. Also, a patient recovering from a contagious disease should be proved not to be a carrier before he is dismissed from quarantine or isolation. Another great source of the infection of others is by mild cases of infection in which the individual is not sufficiently ill to remain in the house. Also, some of the children's infections are transmitted in such early stages that the child is not supposed to be ill, or at least is not supposed to have a contagious disease. This is notably true of measles.

Since it has been determined that direct contagion is almost a universal method of transmission of many of the contagious diseases, and that clothing and baggage are rarely, if ever, agents of such transmission, it is evident that some of the measures which have hitherto been employed to diminish the danger of contagion have been of little or no value. Fumigation of rooms, apartments, houses and buildings by various chemicals, is, in most cases, a waste of time, energy and money. It having been determined that most of the contagious diseases are transmitted by secretions from the nose and throat or mucous membranes, or are eliminated with the excretions, cleansing, and perhaps in some instances antiseptic nose and mouth sprays and gargles, and the immediate destruction, either by chemicals or by heat, of all germs that leave the body either by the urine, feces or mucous discharges, and the cleansing with antiseptics of all objects in contact with or in the immediate region of the infected patient, are all sufficient to prevent contagion. All discharges from the noses and throats of patients who are ill from almost any cause should be received into cheesecloth or paper napkins, and these should be immediately placed in a paper bag which should be burned.

Many antiseptic or disinfectant solutions used for the stools and urine are not satisfactory. Bed-pans or other vessels used for receiving the excretions should be cleansed with boiling water or steam. The urine should be received into a vessel which contains a strong antiseptic, as a chlorinated-lime solution 5 per cent., or mercuric chlorid solution 1:500. The

urine should then stand in this covered vessel for an hour or more before it is thrown down the closet. The same solution may be used to receive the fecal matters, at least in all diseases in which the feces carry infection; but it is here necessary for the fecal deposits to be broken up, that the germicidal fluid may act on all parts. Chlorinated lime may well be added to the mixture, an equal volume of a 25 per cent. mixture, and the whole tightly closed and allowed to stand for two hours or more before it is permitted to pass into the sewer. While boiling these excretions is the surest and most complete way of killing all germs and spores, in private families this would be a disagreeable and inconvenient method. In hospitals efficient steam or boiling measures for sterilizing all excreta should be installed. All possibly contaminated articles of clothing, bedding, rugs, carpets, etc., should be subjected to heat or steam, if such cannot be actually boiled. All other objects in the room may be well cleansed by washing or scrubbing with formaldehyd or mercuric chlorid solutions. Fumigation of the rooms with sulphur and formaldehyd, if not useless, is not sufficient.

VACCINE PREVENTION AND VACCINE THERAPY

A brief survey of what has already been accomplished shows that small-pox may be prevented, and that typhoid fever and paratyphoid fever may be prevented by vaccines. Streptococcic and staphylococcic infections may be prevented by vaccines, and perhaps pneumonia and erysipelas may soon be aborted, if not prevented, by vaccination.

Vaccines will often aid in the cure of chronic tuberculosis, of gonorrheal complications, of septic infections, of erysipelas, and some cases of rheumatism, and will delay some tumor growths. Vaccine therapy, at times, seems to aid in curing typhoid fever, paratyphoid fever, and pneumonia.

Antiserum cures diphtheria and cerebrospinal fever, and we trust some serum will soon be found for the cure of anterior poliomyelitis. Serum developed from the blood of syphilitics who have received injections of arsenic seems to be therapeutically valuable when introduced into the spinal canal of syphilitics suffering from central nervous-system complications.

It is a well-known pathologic fact that properly to combat a local infection by the blood-serum and in order that the necessary amount of detoxicating antibodies may form, the region about the infection must become congested, that is, the blood-flow, though perhaps decreased in rapidity must be increased in amount. Hence, it has been suggested that before the administration of vaccines in chronic localized infections or suppurations, means should be taken, physically or by drugs, to cause hyperemia of the part or parts affected. For instance, if the infection is in the skin or near the surface of the body, arsenic or thyroid may be given, or body heat, body-baking, hot baths, or hot applications may be used. If the circulation is sluggish in an inflamed mucous membrane in the nose, throat, or bronchial tubes, ammonium chlorid or digitalis might greatly benefit the action of the vaccines.

SMALL-POX

Vaccination as a protection against this serious disease has been long confirmed by history. Germany, the most effectively protected country in the world against small-pox, compels vaccination at the age of

1 year, and again at the age of 12. With a population of sixty-five millions in 1913 there were only seven cases of small-pox and no deaths.

Some careful observations on vaccinations against small-pox have been made by Force¹ which it is well to review.

One good method is to cleanse the arm or leg with ether or alcohol, then to remove the epidermis in three small spots, by some such scarifier as a dental scaling chisel, by rotary motion, as recommended by Force. He scarifies each spot about 2 mm. in diameter, then applies a drop of glycerinated virus thinly spread. The amount carried on the broad tip of a sterilized wooden tooth-pick is sufficient for the three spots. When this glycerinated virus has dried he covers it with a layer of gauze held by narrow strips of adhesive plaster, not allowing the adhesive plaster to pass over the treated areas. The patient is told to return in five days, and the areas involved being small, no bad arm should develop. No ointments or antiseptic dressings are allowed. If soreness develops, an alcoholic wet dressing is used, one part of alcohol to two parts of water (or even half and half), and soon the inflammation will subside. On the tenth day antibodies should arrest the growth of the vaccine organisms and immunity should be established.

Cross scarification is said to be prohibited in Germany, as it is said "to favor the growth of anaerobic bacteria," and deep, unsightly scars are the result (Force).

A good take is shown in five days by "a yellowish vesicle surrounded by a narrow red areola." This is vaccinia, or a primary take, while a vaccinoid or secondary take shows in five days "a smaller vesicle surrounded by a wider areola." "When no vesicle develops and the areola appears and subsides early, it is an immediate reaction, first described by Jenner as 'sudden efflorescence.'"

If a revaccination is made in a person with a seven-year-old, or older, scar, he may be vaccinated in two spots with a control spot inoculated with glycerin only. "If either of the two vaccinated spots showed an areola of 5 mm. or over (with or without a papule) at the end of twenty-four hours, which areola (or papule) had decreased after seventy-two hours following vaccination (observations after each twenty-four hours) it was considered a reaction of immunity.

... If either of the vaccinated spots showed an areola at the end of twenty-four hours which developed into a small vesicle, maturing on the fifth or sixth day and then rapidly subsiding, the reaction was considered a vaccinoid. If there was no change until the third day and then a small areola began to form, the case would be vaccinia." A small number of unvaccinated persons with no history of small-pox showed the reaction of immunity in this investigation by Force. Force and his co-workers believe that in these cases of apparent immunity without scar, previous vaccinations had been unsuccessful so far as typical sore and subsequent scar is concerned, but sufficiently successful to cause subsequent immunity. If there is no reaction of any kind, Force thinks that the vaccine used is inert.

The caution is given to observe daily the vaccinated area in all doubtful cases, as immunity reactions are soon over, and revaccination may be done unnecessarily.

1. Force, John Nivison: An Investigation of the Causes of Failure in Cow-Pox Vaccination, THE JOURNAL A. M. A., May 9, 1914, p. 1466.

The question of the vaccination pustule is worthy of careful consideration. Dyer² states that the vaccine vesicle is just as much an indication of vaccinia as the hard chancre is that a patient has syphilis. He also states that the vaccination injury should stop at the vesicle, that the pustule is only a sign of a local infection, and hence should be prevented. Therefore, he advises breaking the vesicle and treating the vesicular lesion antiseptically, and suppuration will thus be prevented. Such a method prevents glandular enlargements, erythemas and other eruptions. Dyer also urges, as soon as the vaccine vesicle has healed, revaccination to ascertain if the patient is thoroughly protected, and he would revaccinate as long as a vesicle will form, and would not wait a number of years before such a trial. He believes a patient thus treated is positively protected against small-pox.

(To be continued)

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. THEIR ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT AND IN PART ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS ARE ASKED FOR TO AID IN THE REVISION OF THE MATTER BEFORE PUBLICATION IN THE BOOK "NEW AND NONOFFICIAL REMEDIES."

THE COUNCIL DESIRES PHYSICIANS TO UNDERSTAND THAT THE ACCEPTANCE OF AN ARTICLE DOES NOT NECESSARILY MEAN A RECOMMENDATION, BUT THAT, SO FAR AS KNOWN, IT COMPLIES WITH THE RULES ADOPTED BY THE COUNCIL.

W. A. PUCKNER, SECRETARY.

The following preparation has been accepted for inclusion with the appendix to New and Nonofficial Remedies:

Maltine Co., Brooklyn, N. Y.

Maltine Malt Soup Extract.—Maltine containing potassium carbonate, 1.1 Gm. to each 100 Gm. according to the formula of Dr. Keller, Universitäts-Kinderklinik, Breslau, and alcohol, 3.88 per cent.

The following dosage forms of accepted articles have been accepted for inclusion with New and Nonofficial Remedies:

ACNE VACCINE (See N. N. R., 1914, p. 246).

Greeley Laboratories, Inc., Boston.

Acne Vaccine.—Marketed in packages of six syringes each containing 12 million bacteria.

Lederle Antitoxin Laboratories, New York City (Schiefelin & Co., New York).

Acne Vaccine.—Marketed in packages of four syringes containing respectively 5, 10, 20 and 40 million killed acne bacilli.

BACILLUS COLI VACCINE (See N. N. R., 1914, p. 247).

Greeley Laboratories, Inc., Boston.

Colony Vaccine.—Marketed in packages of six syringes each containing 1,000 million bacteria.

Lederle Antitoxin Laboratories, New York City (Schiefelin & Co., New York).

Colony Vaccine.—Marketed in packages of two vials each containing respectively 50, 100, 200 and 400 million killed bacteria.

BACILLUS PYOCYANEUS VACCINE (See N. N. R., 1914, p. 249).

Greeley Laboratories, Inc., Boston.

Pyocyaneus Vaccine.—Marketed in packages of six syringes each containing 1,000 million bacteria.

H. K. Mulford Co., Philadelphia.

Pyocyano-Bacterin.—Marketed in packages of four syringes containing respectively 50, 100, 200 and 400 million killed bacteria.

2. Dyer: Am. Jour. Trop. Dis. and Prev. Med., 1913, 1, 447.

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SATURDAY, OCTOBER 24, 1914

INFLUENCE OF HEREDITY ON THE OCCURRENCE OF CANCER

As long as our chief source of information concerning cancer biology lay in observations on human material, with such unreliable information concerning ancestry as can be furnished by clinical histories, there was little prospect of learning much concerning the influence of heredity. The data obtainable were confusing and the conclusions contradictory. Perhaps as reliable and well-controlled an investigation as we have on this subject was that of the English statistician, Karl Pearson, who found no evidence whatever that persons with a history of cancer in relatives were predisposed to cancer. With the development of the study of tumors in lower animals, in which pedigree can be accurately controlled, the possibility of ascertaining the influence of heredity became more encouraging, and there are now recorded many observations, mostly fragmentary, although some systematic investigations have been made. Mice, because of their rapid breeding and known tendency to neoplasm formation, offer by far the best material for such studies, but even with these favorable subjects the accumulation of sufficient material for reliable conclusions is difficult. Mice are not hardy animals, and epidemics sweep through even the most carefully kept collections, while at the best, spontaneous tumors have not been common among the laboratory stocks. Hence most of the evidence hitherto presented has been small and incomplete, especially if we exclude the studies of the influence of heredity on susceptibility to inoculated tumors, which is quite a different matter from its influence on their natural, spontaneous occurrence. It is satisfying to mention that much of the best evidence on this subject has come from Americans, notably Leo Loeb and Tyzzer.

Such reports as have appeared almost without exception indicate that heredity does influence the incidence of spontaneous cancer in mice. Recently an extensive and carefully controlled investigation of this subject has been reported by Miss Maud Slye¹ of the

1. Slye, Maud: The Incidence and Inheritability of Spontaneous Tumors in Mice, *Ztschr. f. Krebsforsch.*, 1913, xiii, 500; *Jour. Med. Research*, 1914, xxx, 281. Slye, Maud; Holmes, Harriet F., and Wells, H. Gideon: The Primary Spontaneous Tumors of the Lungs in Mice, *ibid.*, 1914, xxx, 417.

Sprague Memorial Institute, who exhibited some of her material at the last session of the American Medical Association in Atlantic City. Utilizing a large stock of mice, bred at first for the purpose of studying certain features of heredity, and in which spontaneous cancers were observed at intervals, Miss Slye undertook a systematic study of the influence of heredity on the occurrence of tumors in these animals, using the same methods which would be used in the testing of any stock Mendelian character, and judging the results by the same criteria that would be used in determining the inheritability of any character, such as coat color, or ear shape, for example. From this very large and thoroughly studied material she has obtained evidence that cancer is a mode of growth which is profoundly influenced by the ancestry of the mice. The power to resist cancer is, in Mendelian terms, a dominant character, and it can be bred into and bred out of different strains of mice as certainly, according to these results, as a coat color can be. By using the recognized principles of breeding it was found possible to produce strains of mice in which the most usual cause of death was cancer in those animals that reached cancer age; equally well, strains were obtained in which practically no cancer ever occurs, and the transition of cancerous strains into non-cancerous, or the reverse, by processes of hybridization, was found quite as feasible as the breeding in and out of coat colors or other "unit characters." In such hybrid strains the cancer element was found to crop out exactly as any other character would; for example, if the cancer strain were introduced in an albino stock the cancer would be found to appear with the albinism in subsequent generations. The conclusion seems warranted that heredity influences cancer by determining the character of reaction which follows non-specific injuries to tissues. This is well shown by a series of 155 cases of spontaneous primary tumors of the lungs, which are common in mice and arise apparently as a sequel of chronic inflammation in the lungs. Of this series all the definitely malignant tumors occurred in mice derived from cancer-bearing strains, while only nine of the entire number were found in non-cancerous strains, and these nine were simple papillary growths not far removed from simple inflammatory proliferations. That is, the universally prevalent lung inflammations are much more likely to lead to tumor formation in mice predisposed by a cancerous ancestry than in mice of cancer-free ancestry. Almost any individual probably can develop a tumor if subjected to just the proper sort and amount of injury at a suitable time, as shown by the experience with Roentgen-ray cancer, but the range of injury which may cause cancer will be profoundly modified by the inherited character of proliferative capacity of the individual. A striking analogy is known by breeders, in the deformities of the feet of

chickens which may be produced by improper heating of incubating eggs. Such abnormalities are found especially frequent in particular strains of birds, and may be observed in these strains when eggs from other strains exposed to the same conditions give perfectly normal results. The liability is the thing transmitted, but without appropriate conditions the effect is not produced; that is, heredity modifies the character or degree of the effect produced by a common injury.

These results probably have a more important bearing on the problem of specific tumor etiology than on the influence of ancestry on the occurrence of cancer in man, for it is always to be borne in mind that the mouse cancer strains were produced by carefully planned inbreeding, with conditions which would probably rarely if ever be duplicated in human careers. They seem to fit poorly with the hypothesis of a specific infectious agent, for many and extensive control experiments have failed to yield a single instance of contagion or transmission of cancer from one mouse to another, while the tendency to cancer appears entirely according to the laws of heredity as manifested in other characters of the animals. It is, of course, possible that a specific lack of resistance to a specific cancer parasite may be transmitted by breeding, but, if so, the hypothetic parasite is capable of entering the host in most diverse ways, and of stimulating growths in organs and tissues not directly accessible to infection, as the ovaries, testicles or lymph-glands. To quote Miss Slye on this point:

All of my observations seem to indicate that cancer is a mode of growth. Let me compare briefly the results of these experiments with the results of one infection somewhat frequent among mice, viz., sarcosporidiosis. Where mice are allowed to stay in the same cage, every mouse at autopsy shows some degree of sarcosporidiosis, whereas members of the family kept elsewhere are no more liable to it than any other strain of mice. But among members of cancer strains, cancer crops out no matter where the mice are kept. A daughter frequently develops cancer before the mother does, and months after they have been separated. A granddaughter will develop cancer who was not born until after the death of the tumorous grandparent.

Furthermore, cancer is a disease of mature and old age, when infections are much less common than early in life, and again, reproduction and nursing may check the rate of growth of cancer while favoring the progress of infectious diseases.

THE ORIGIN OF BENCE-JONES PROTEIN IN THE URINE

The name of Bence-Jones protein has long been associated with an albuminous substance found excreted, in comparative rarity, in the urine and resembling some of the proteoses occurring among the digestion products of protein. It is discovered by the phenomenon of precipitation of the protein when the urine is warmed to about 45 or 55 C. and further com-

plete solution of the precipitate when heated to boiling. The Bence-Jones proteinuria has usually been detected in cases of multiple myeloma, and this symptom has served to differentiate the disease from other bone lesions, as carcinoma, sarcoma and osteomalacia.

The knowledge of the origin of the Bence-Jones protein has remained very incomplete despite the long time that its clinical occurrence has been known. At one period the substance was assumed to be produced in the diseased areas of bone-marrow and subsequently excreted as is any "foreign" protein finding its way parenterally into the body. To this the valid objection has been offered that it is inconceivable that the relatively small areas of diseased bone-marrow should be able to produce the large amounts of Bence-Jones protein found in the urine in some cases. Magnus-Levy,¹ therefore, proposed the theory that this protein is formed in the intestine as the result of as yet unknown abnormal conditions existing in the bowel in certain cases. Folin and Denis² have remarked that this hypothesis seems far less plausible to-day than when it was propounded, because of the changed views concerning the character of protein digestion and absorption which now prevail. If Magnus-Levy's contention were correct, then the output of Bence-Jones protein might be expected to show some direct relation to the amount and possibly the kind of protein in the diet. The alternative would put the Bence-Jones proteose into the category of a product of pathologic internal digestion which has nothing to do with the proteolytic processes centered in the gastro-intestinal tract.

The careful study of the metabolism in a case of Bence-Jones proteinuria associated with multiple myeloma of the ribs, at the Massachusetts General Hospital in Boston,² is likely to furnish a more convincing clue to the origin of the protein. Folin and Denis have investigated the effects of different levels of protein intake on the proteose excretion. The latter varied from 1.7 to 2.8 gm. in urines containing 5 to 8.5 gm. of total nitrogen, while with a diet richer in protein the proteose output rose to 6.5 gm. and the total nitrogen to 16 gm. A detailed examination of the metabolic end-products failed, however, to disclose any definite or constant relationship between the proteose and the total output of nitrogen. Indeed, the elimination of the Bence-Jones proteose was almost as high during starvation as during the liberal feeding of protein. Aside from an occasional small creatin elimination when the subjective symptoms became severe, the protein metabolism in multiple myeloma appears to be normal so far as the ordinary nitrogenous metabolism products are concerned.

Although it now seems unlikely that the amount of protein taken with the food has any direct influence on the amount of excreted proteose—although the gen-

1. Magnus-Levy, A.: *Ztschr. f. physiol. Chem.*, 1900, xxx, 237.

2. Folin, O., and Denis, W.: *Metabolism in Bence-Jones Proteinuria*, *Jour. Biol. Chem.*, 1914, xviii, 277.

eral level of the metabolism has been assumed to have some bearing³—there is as yet too little evidence to enable one to formulate any tenable theory of "internal" origin of the Bence-Jones protein. To have excluded the food intake as the decisive causal factor is in itself a step in advance.

THE LIVER AND UREA-FORMATION

It will come as a startling surprise to many to learn that the liver has been asked to surrender the traditional privilege of responsibility for the production of urea in the body. Have we not been told by physiologists for a generation or more that this organ is the chief, if not the sole seat of urea-formation? But science is no respecter of theories, although she jealously guards her well-established facts.

One of the extensive inroads into the conventional hypothesis was made by the conclusive demonstrations that the amino-acid products of intestinal digestion are absorbed and travel as such to distant parts of the organism.⁴ It is true that the liver forms urea from the ammonia reaching this organ with the portal blood. Ammonia is, however, not a product of the metabolic cleavage of the amino-acids as they start their way into the organism proper, but rather a bacterial product reaching the portal circulation from the putrefying contents of the large intestine and then converted into urea merely as one of the numerous protective devices of the organism.⁵ Only a very small fraction of the day's output of urea can be accounted for in this way. As Fiske and Sumner,⁶ who have attacked the claim that the liver represents the chief seat of urea-formation, remark, many of the writers on the subject have taken it for granted that urea-formation from amino-acids, in its final steps, is identical with and must, therefore, occur at the same site as that from ammonia. This assumption has no firm foundation on fact; for it cannot be stated that ammonia is an obligatory intermediate product in the cleavage of amino-acids in the mammalian organism.⁷

If we turn to the sort of evidence which has served to assign the leading rôle to the liver, it will be found to rest on experiments in which this organ has been excluded as far as possible from the circulation. Granted that the urinary urea output is depressed under such conditions, it must not be overlooked that after such heroic treatment the liver is not the only organ affected. Renal function is also markedly disturbed, as the attendant oliguria and albuminuria testify.

The Boston investigators, Fiske and Sumner,⁶ working in the Biochemical Laboratory of the Harvard Medical School, have substituted the analysis of blood and tissues for the urine analysis adopted by their predecessors in dealing with the problem. By injecting amino-acids into the circulation, after the exclusion of all of the important abdominal viscera from connection with it, they have demonstrated that urea can be formed from the protein derivative, even in animals so treated that the participation of the liver is excluded. The accumulation of urea per unit mass of blood and tissues after intravenous administration of amino-acids is reported to be as great (when the trials are suitably carried out) after the liver and other abdominal viscera are withdrawn from the possibility of participation as when they are in their normal relations. The logic of the situation compels the conclusion that the liver is neither essential nor the chief site of urea-formation. This need not, however, controvert the possibility that the process can take place in the liver as well as in other tissues.

If, as these newer studies suggest, direct, unassailable evidence that the liver is the predominant organ for the formation of urea from amino-acids does not exist, students of clinical diagnosis will at once inquire as to the status of some of the tests employed in the so-called functional diagnosis of liver lesions. Obviously this chapter cannot be regarded as a closed one. With the new points of view the amino-acid tests must be investigated anew.

PLUMBISM IN THE SMELTING AND REFINING INDUSTRY.

The fourth number of the series on industrial accidents and hygiene has been issued by the Bureau of Labor Statistics. It deals with lead poisoning in the smelting and refining of lead. This important industry employs in twenty plants visited by an investigator about 7,500 men, all of whom are exposed to the fumes or dust of lead. The report considers the dangers inherent in the various metallurgic processes, the precautions available to lessen these dangers, the actual sanitary conditions in the different plants, the extent of lead poisoning during the year 1913 among these 7,500 men, and the medical care furnished them. Of late years there has been a notable improvement in smelting and refining plants, due largely to the concentration of operations in a few large establishments and the consequent abandonment of old, crowded buildings. There is now probably no plant in the United States in which some effort is not made to lessen the danger of lead poisoning as well as to prevent accidents. These efforts, however, are perfunctory in some, and in none are they sufficient. There is not one plant in which no fumes are allowed to escape, not one which is as free from dust as it might be. The result of this neglect is found in the records

3. Allard and Weber: *Deutsch. med. Wchnschr.*, 1906, p. 1251. Hopkins and Savori: *Jour. Physiol.*, 1911, xlii, 189. Voit, F., and Salvendi: *München. med. Wchnschr.*, 1904, p. 1281.

4. In What Form Are the Protein Digestion Products Absorbed? editorial, *THE JOURNAL A. M. A.*, Dec. 20, 1913, p. 2245.

5. Compare Folin, O., and Denis, W.: *Jour. Biol. Chem.*, 1912, xi, 161.

6. Fiske, C. H., and Sumner, J. B.: *The Importance of the Liver in Urea-Formation from Amino-Acids*, *Jour. Biol. Chem.*, 1914, xviii, 285.

7. Compare Dakin, H. D.: *Jour. Biol. Chem.*, 1909, vi, 235.

of lead poisoning among the men. While Great Britain had a rate of only 1.8 per hundred men employed in a single year in this industry, the rate in this country was something over 22 per hundred.

It was found absolutely impossible to obtain a complete list of the cases of lead poisoning in this industry, as can be done in Great Britain, because of the difficulties offered by physicians. To begin with, no uniformity exists as to what constitutes a reportable case of lead poisoning. One physician following British usage includes cases of anemia with the lead line, another employed by the same company recognizes nothing milder than severe colic, with nausea, constipation and vomiting. There are some physicians who act only as medical attendants and know nothing at all about conditions in the plant, who lecture the men about washing their hands without ever asking if it is possible for them to do so, and who do not know enough about the work to be able to say from which department most of the lead poisoning comes. On the other hand, there are physicians who act as consulting sanitary experts, who go over the plant frequently, keep track of the men, and notify the superintendent when any department is sending in an unusual number of cases.

The investigator takes issue with those physicians who believe that the men themselves are responsible for their own ill health, who maintain that it is lack of personal cleanliness that causes lead poisoning in smelters. It is dust that is the dangerous element, and under dust is included the excessively fine suspension of lead salts that make up the fumes from heated lead and lead ores.

An original observation in this report records experiments in the solubility of the supposedly insoluble galena-lead sulphid ores, made by A. J. Carlson and A. Woelfel of the Physiological Department of the University of Chicago. Contrary to the assertions of Blum and of Rambousek, these observers found the pure sulphid to be soluble in human gastric juice to the extent of 4 per cent., the sulphid ores averaging 2.5 per cent.

A certain seasonal variation was observed in the occurrence of plumbism in this industry. Thirty-three hospital years with a record of 2,847 cases were analyzed, and a curve resulted the two highest points of which were reached in January and June. The first one is explained on the ground that the onset of cold weather increases the dangers of dust and fumes, for the men close windows and remain indoors around the furnaces and eat their lunch inside instead of outside. The second rise is harder to explain. The most probable explanation seems to be that these June cases are the acute cases of poisoning which occur among newly hired employees. It seems that there is a regular exodus from the smelters in the spring to the farms and beet fields, and newly arrived immigrants are taken to fill the vacant places. As the

records show that most of the cases of lead poisoning in smelters occur after from one to three months' exposure, men entering in April or May would come down with acute poisoning along in June.

To comment on the extreme importance of practical research of this character is superfluous. Since its establishment, this bureau has often displayed its efficiency in meeting the need which created it. Further developments may be awaited with the confident hope that conditions will continue to improve.

THE RELATION OF DIFFERENT FOODS TO THE FLOW OF THE DIGESTIVE SECRETIONS

One by no means negligible reason for the very wide-spread interest which has been aroused for Pawlow's work on the digestive glands lies in its immediate application to the daily problems of diet. It disclosed unexpected interrelations between various functions of the body; it presented the influence of psychic factors and the nervous system on a physiologic process in a tangible way, and, furthermore, it unfolded the evidence for a very specific rôle of certain foods on secretion in a degree unexpected, even if not entirely unknown.

The original publications of the Russian physiologist contain such a wealth of suggestive observations that the subsequent additions to the literature of this field of inquiry seem comparatively insignificant. In some respects the more recent investigations in the physiology of the alimentary secretions are somewhat corrective in character. Thus it has become more and more apparent that the psychic secretion initiated at the beginning of a meal is at best transitory and unimportant in comparison with the later flow of digestive juices that is referable to the foodstuffs themselves. Without denying or minimizing the value of the early secretion we may nevertheless admit that from the point of view of gastric pathology or digestive therapy it is *par excellence* the regulation or control of the non-psychic provocatives of the activity of the digestive glands which claims foremost attention. Modern research has established the fact that this phase is essentially chemical in origin; hence the suggested import of variations in the composition of the ingested food products.

The comparison of the secretory efficiency of different foods remains unsatisfactory so long as quantitative measurements are not applied to the experimental observations. In Professor Cohnheim's new physiologic laboratory in the Allgemeines Krankenhaus Eppendorf at Hamburg, Wolfsberg¹ has carried out a rather extensive research on the dependence of the volume of the digestive secretions on the character of

1. Wolfsberg, O.: Ueber die Einwirkung einer Reihe von Nahrungsmitteln auf die Sekretion der Verdauungsdrüsen, Ztschr. f. physiol. Chem., 1914, xci, 344.

the diet. He reasoned that if the stimulus which plays the predominant part is a chemical agent, the product of its action—secretion—ought to be roughly proportional to the amount of stimulus, that is, food employed. The same rations were therefore administered to the same animal in successive portions representing multiples of some earlier feeding; for example, bread in quantities of 50, 100 or 200 gm. As a result, two distinct groups of foods could easily be classified. One of these, which includes bread, butter, sugar and potatoes, is characterized by inducing secretion that is quite independent, in amount, of the quantity ingested. To the second group belong milk, meat and bouillon, each of which incites a flow of the secretions directly proportional to the quantity of food material in the intake. Evidently the increased secretion which the foods of this second group bring about is attributable to chemical products which release the secretory hormones of the gastric mucosa.² A definite stimulus in these cases is responsible for a quantitatively corresponding response.

Incidentally, it has been observed by Wolfsberg,¹ as well as by others, that a large increase in the volume of secretion does not greatly delay the discharge of the contents from the stomach. Evidently an augmented volume in this organ, acting to increase its distention therein, actually provokes a more rapid contraction and emptying.

Those who apply teleological reasoning to physiologic phenomena might conclude that potatoes and bread, which make less physiologic demand on the digestive organs for their digestion, are physiologically more economical as food. Meat stands at the other extreme of the expenditure of secretory energy per calorie of food value received. Most readers will readily agree that the criterion here suggested is little likely to prove acceptable. At any rate, we have no desire to enter into the controversy to the extent of raising the question of vegetarianism versus animal foods on the basis of this evidence.

Current Comment

THE WAR AND THE ECONOMICS OF PRESCRIBING IN ENGLAND

One effect of the present war in Europe has been to cause the British to urge that medicinal products heretofore purchased from Germany should now be made in England. The campaign for British-made pharmaceuticals is both natural and, so far as the idea can be carried out without violating economic principles, rational. The basic principle behind the movement is that it is the patriotic duty of every inhabitant of the British Isles to do business whenever possible with

British firms rather than German firms, and thus not only keep the money "at home," but also prevent it going to their adversaries. Numerous substitutes for German products are being advertised in the different British medical journals. In the current issue of the *Lancet* is a short note from an English physician who writes to the editor as follows:

"I am pleased to see the advertisement of 'Helicon' in your issue of last week. I find that *helicon* and *aspirin* are identically the same. [*Italics ours.—Ed.*]

"Now is the time. Prescribe *helicon* and put money into English pockets and not aspirin and money in German pockets. This is to be a war of endurance, and the length of the purse will settle it."

Proprietary prescribing is evidently a "state of mind." If it were not, the intelligent physician would urge that instead of prescribing a definite chemical substance under a fancy name—whether German or British—the economical and rational thing to do would be to prescribe it under its own name. It is doubtless true that whether British physicians prescribe acetyl-salicylic acid under the name of "Aspirin" or "Helicon," the British public will have to pay a fancy price for a staple product. If the conservation of the financial resources of the people is the thing to be sought, why in the name of common sense make the public pay a high price for acetyl-salicylic acid for no other purpose than that of perpetuating an unscientific habit—that of prescribing things under a proprietary rather than a common name? This habit, fortunately on the decrease in this country, seems to be increasing in the British Isles. Turning to the same issue of the *Lancet* that contains the letter quoted above, the question is driven home even more strongly. Our British contemporary carries a half-page advertisement of that hoary and impudent fraud, Antikamnia. Is there any good reason why the British people should be made to pay a fancy price for their acetanilid or acetphenetidin tablets—and Heaven knows which they get at present under the name Antikamnia—simply for the sake of putting money into the pocket of its St. Louis manufacturer? Another half page is given over to an advertisement of "Hayden's Viburnum Compound." Is there any economic reason for prescribing this unscientific and widely puffed preparation and making the British public pay a fancy price for it, the proceeds of which go finally into the pockets of a Massachusetts concern? Still another half page is sold by the *Lancet* to the exploiters of "Hagee's Cordial of the Extract of Cod Liver Compound," another St. Louis nostrum, which cannot be defended on the score of either economy or scientific prescribing. A full page is sold to "Glyco-Thymoline," a New York product. Can the British profession defend the prescribing of this simple mixture sold at a fancy price when exactly the same results can be obtained from pharmaceuticals to be found in the British Pharmacopeia? As a matter of fact, the prescribing of proprietary remedies by British physicians has always been against the interest of the British public as well as opposed to the practice of scientific medicine. Under present conditions it is more than this; it is an economic wrong. There may possibly be a few

2. Compare Edkins, J. B.: *Jour. physiol.*, 1906, xxxiv, 133; Gross, W.: *Arch. f. Verdauungskr.*, 1906, xii, 507, and Editorial, *The Induction of Gastric Secretion*, *THE JOURNAL A. M. A.*, March 21, 1914, p. 934.

proprietary medicines that have no exact counterpart in the British Pharmacopeia or the Codex, but their number is so small as to be negligible. Certain it is, the vast majority of proprietary remedies at present sold in Great Britain are unscientific, high-priced mixtures whose use benefits none but a few manufacturers and whose sale constitutes an unnecessary drain on the resources of the British public. When a British physician prescribes a proprietary made in the British Isles he imposes a burden on the many for the benefit of a few; when he prescribes a proprietary made in some other country he not only puts an unnecessary tax on the British public, but also sends money out of the country in doing it. From the point of view both of scientific medicine and of public policy, there is no better time than the present for British physicians to discard the majority of proprietary remedies.

AN IMPORTANT EPOCH IN MEDICAL EDUCATION

The opening of the session of 1914-1915 in the medical schools marks an important epoch in medical education in this country. It is noteworthy that this fall thirty-seven medical colleges, for the first time, are requiring for admission one year of collegiate work in addition to a four-year high school education. This standard, which in 1904 was considered as "ideal," has now become the essential minimum and has been adopted by eighty-four of the 101 medical colleges, and by twenty-two of the forty-nine state licensing boards. In addition to this, thirty-four of these colleges and seven of the state licensing boards have gone further and adopted the requirement of two years of collegiate work as the minimum preliminary standard. This is indeed a marvelous improvement over conditions which existed only a brief ten years ago, when of the 166 medical colleges only four were requiring any collegiate work for admission, and comparatively few were requiring even a completed four-year high school education. Entrance requirements, meanwhile, may be taken as an index of the other remarkable improvements made in medical education during the last decade. The general adoption of the higher entrance standard has resulted in a remarkably increased attendance in colleges of arts and sciences. In fact, some of these institutions which formerly had small enrolments now find their classes so increased that provision for a larger equipment and additional teachers has been necessary. Again, the general adoption of this higher standard makes the entrance requirements of all medical colleges more uniform. As a consequence, students are exercising a larger freedom in selecting the institution they are to attend and will usually select the better one. This is shown to be a fact, since colleges which have for several years had small enrolments on account of their higher entrance standards this year report marked increases in the numbers admitted. More important, however, is the fact that the great majority of students from now on will be better qualified to enter on the study of medicine, and to master the greater complexities of the modern

medical curriculum. Finally, in the success of the campaign for higher entrance standards the public has the assurance that the medical schools hereafter will turn out a larger proportion of thoroughly qualified physicians.

WHY NOT AN EXCHANGE OF MEDICAL TEACHERS?

For several years some of our universities have been exchanging professors for certain periods with universities abroad. Students in such universities have the opportunity not only of meeting and getting acquainted with foreign university teachers, but also of obtaining instruction under the methods and with the interpretations used abroad. Not only the student but the university also is undoubtedly benefited by this interchange of teachers. Would it not be worth while for medical schools to consider the adoption of a similar procedure? Medical teachers and investigators from Europe are frequent visitors in this country. Since 1896, when the Lane Medical Lectures were founded by Dr. Levi Cooper Lane at the Cooper Medical College, San Francisco, now the School of Medicine of Leland Stanford University, most of the biennial lectures provided for have been given by prominent medical teachers from abroad. In 1902, the Christian A. Herter Foundation was established at the Medical Department of Johns Hopkins University "for the formation of a memorial lectureship designed to promote a more intimate knowledge of the researches of foreign investigators in the realm of medical science." Since this foundation was established a course of lectures has been given each year by some prominent foreign investigator or clinician. As announced last week,¹ the lectures this year were given by Dr. Thomas Lewis of London, the editor of *Heart* and the leader in the newer methods of studying cardiac function. Dr. Lewis is also to spend a week at the Medical School of Harvard University, where he will be placed temporarily in charge of certain wards at the Peter Bent Brigham Hospital. Considering the extent, therefore, to which prominent medical men from abroad are already lecturing in this country, it would not seem difficult to arrange for an enlargement of the courses now being given, into an exchange of medical teachers. It could not be said that the benefits would be one-sided — no such assertion has ever been made in the exchange of teachers of the colleges of arts and sciences. On the contrary, as shown in a comment above, medical colleges in the United States have been greatly improved in the last ten years and there is now much that European medicine might learn from American teachers. Chiefly, however, the arrangement would result in closer relationships between the medical teachers of this and other countries that would undoubtedly be mutually beneficial. Considering what is now going on in Europe, these suggestions may seem inopportune; the principle is correct, nevertheless. Meanwhile, even more benefit would result from a similar exchange system between the high grade medical schools at home; and such an exchange could be easily arranged.

1. General News, THE JOURNAL A. M. A., Oct. 17, 1914, p. 1404.

This would bring teachers of the different medical schools into closer sympathy, and improved methods of teaching would be more widely adopted and faulty methods corrected. Incidentally, but perhaps of most importance, the students of all medical schools participating in such an exchange would obtain a more uniformly thorough training in the latest and most improved methods of investigation, of diagnosis and of treatment.

CHILD MORTALITY FROM BURNS

Some months ago¹ we commented on the dangers of fire from the use of certain materials for children's clothing, especially mentioning a kind of light cotton material known as flannelet. The condemnation has been about equally shared by this and other similarly combustible dress materials and the practice of warming apartments with open unprotected grates, which are apparently more depended on for heating in Great Britain than in our severer winter climate. The subject has not at any time aroused the attention in this country that it has in Great Britain; nevertheless there cannot be very many physicians who have not had to treat serious burns, generally in children, that may have been caused in some such ways. A recent report by the coroner's physician of Brooklyn suggests that the prevention of such accidents deserves more consideration from the medical profession here. He gives as the record for sixteen days in that borough, September 4-20, eighteen fatalities from burns in children, beside three of adults. The average age of the children killed by fire is given by him as between 2 and 5 years. How many not fatal but still serious burns of children occurred can only be conjectured.

A "CURE-ALL" APHRODISIAC

In an article on modern Korea, R. Malcolm Keir² of the Department of Geography and Industry at the University of Pennsylvania calls attention to the important source of income to Korea which accrues from ginseng. In spite of the fact that the peculiar man-shaped root has no medicinal value so far as Western science can determine, though it acts with wonderful efficacy on the minds of the Chinese, the Koreans for decades paid their tribute to China in ginseng. Some of the wild ginseng roots which grow in the Northern Mountains and resemble human beings more closely than the cultivated roots, and which take on a curiously human pink color after being steamed in a special manner, sell for \$150 a pound. The finding of one root in three years gives enough return to supply the entire livelihood for the whole of that period to the family of the finder. This speculative element in the industry has its special attraction for many Orientals whose gambling instincts are well developed. The cultivated variety of the plant is valued at about two dollars a pound, but roots selected for their particular human resemblance have a much enhanced price. Although barely

275 acres are planted in ginseng, yet the annual value of the crop is \$130,000. For the Chinese, ginseng is a universal panacea, a "cure" literally for all the ills that flesh is heir to. It has a special reputation as an aphrodisiac, and probably nothing can better help the physician to judge critically of the value of aphrodisiacs generally than the fact that the Chinese are quite sure of its marvelous efficacy for amorous excitation, though no evidence can be obtained in the West of its power to produce any such effect. The Chinese are shrewd, but are quite as amenable as other people to the influence of the mind over the body while they think that the remedies they employ are rather affecting their bodies directly and their minds only by the betterment in their physical well being. Most of us have thought of the ginseng legend as a thing of the past, as it seemed destined to become in our student days, but here it is a prominent factor still in a nation's industry and geography. And who shall say that the rest of the world is a whit better than the Chinese when it comes to paying liberally for an absurd "cure-all" whose chief alleged virtue is to give manly vigor back to senile or presenile neurasthenics?

OUR FOREIGN EXCHANGES

At the first onset of the war there seemed likely to develop a sudden dearth of foreign medical literature, and our translators and abstractors were wondering if they should not prepare for an enforced vacation. But aside from those of France, our principal exchanges are still coming. The French publications, however, appeared to have been suspended from the start, none having been received until October 20, when the issues of the *Presse Médicale* from August 12 to September 23 were delivered in one bundle. This journal is appearing now as a four-page bulletin of medico-military information. Those of Belgium continued for a time, but they have now ceased to appear. The journals which we are receiving are, in every instance, greatly reduced in size. The German periodicals seem to be considerably delayed in arriving: The *Berliner klinische Wochenschrift* for September 28, the *Zentralblatt für Gynäkologie* for September 26, the *Deutsche medizinische Wochenschrift* for September 24, were received October 19; the *Münchener medizinische Wochenschrift* for September 15—the last one received—came October 10; and the last number of the *Wiener klinische Wochenschrift*—that for August 20—was received September 15. On the other hand, there seems to be increased speed in the delivery of English publications, all of which are continuing: e. g., on October 12 we received the London *Lancet* and the *British Medical Journal* of October 3; and on October 19, the same journals for October 10. Heretofore these journals were not delivered for ten days after the date of issue. The explanation, we believe, is the fact that the fast Atlantic steamers now sail to Halifax and Quebec, rather than to New York, which makes a much shorter ocean trip. Our Scandinavian exchanges and one Italian the *Milan Gazzetta*, have been received

1. Deaths of Children by Burning, Current Comment, THE JOURNAL A. M. A., Jan. 3, 1914, p. 46.
2. Keir, R. Malcolm: Bull. Am. Geograph. Soc., 1914, xlii, No. 10.

regularly, with only slight delays, but the *Policlinico* of Rome and the *Riforma* of Naples have not been seen since the war began, and no Russian mail of any kind has come through. Our Paris and Berlin letters have not appeared as regularly as in the past. In the case of the former this may be attributed to the fact that our correspondent at first seemed to be at the front, but later resumed his correspondence; and our German correspondent has written with such hot invective and burning satire that THE JOURNAL could not have published the first three letters and still maintained absolute neutrality. Our Paris correspondent has also allowed himself to deviate from medical matters, and of course we have had to eliminate such statements, making his letters shorter than usual. The same also applies, but to much less extent, to our London correspondent. The matter eliminated, however, was absolutely non-medical. Our Vienna and Budapest correspondents seem to have been lost from the very start of the war.

CHOLERA AND THE WAR

Epidemics of cholera are reported to be threatening the various armies, especially those engaged on the Russo-Austrian frontier. But it will be remembered that even in the normal state of affairs cases of Asiatic cholera in this neighborhood are not unusual. Cholera is a disease whose spread is dependent largely on infected drinking water and carriers, apparently healthy. So far as is known infection occurs only through the alimentary tract; this is to say, the germ must be swallowed. It seems probable that in addition to water as a source of infection, food when exposed may become contaminated with the organism—as for instance through the agency of flies. The germ is passed with the feces, and unless there are efficient sanitary precautions water-supplies are likely to become infected. Therefore in the passage of large bodies of troops, when sanitation cannot be perfect, an outbreak of this disease may be expected. The cholera organism, the comma bacillus, is especially sensitive to drying and there seems to be a doubt whether or not it is able to multiply outside of the body in impure water. In the recent Balkan war cholera was reported in many places and many cases occurred, but the disease never became epidemic. With the assistance of the highly efficient sanitary services of modern armies, wide-spread epidemics of such diseases may be prevented. Soldiers are observed carefully and in efficient camps a soldier who has frequent stools is reported to medical officers, isolated and his symptoms watched. It has been suggested that the coming of winter may lend aid in preventing the spread of cholera. However, the increased moisture and seepage of surface water carrying contaminating material as well as the closer contact of human beings engendered by the winter season make infection still more likely. As an aid to protection, active immunization of men with the Haffkine vaccine may be practiced. Possibly conditions in this war will be the means of determining still more exactly the status of this protective measure.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Personal.—Dr. Harry E. Kirschner, medical director of the Pottenger Sanatorium, Monrovia, has resigned and opened an office in Monrovia.—Dr. Donald P. Webster, San Francisco, has returned from Alaska.—Dr. Lorne B. Graham, Pacific Grove, has started for Europe.

Municipal Hospital Ready.—After more than five years of steady construction work, the new City and County Hospital, San Francisco, erected at a cost of \$2,000,000 is now completed and will be turned over to the city, November 1. The hospital is constructed of vitrified brick and really consists of eight separate buildings connected by a large corridor, from which the ward buildings branch out at right angles. At one end of the corridor is the Receiving Building and at the other end, the Nurses' Home and Training School. In the center of the building is the Administration building with two ward buildings on either side.

Faculty Appointments.—Dr. George H. Whipple, a member of the faculty of the Johns Hopkins Medical School, has been appointed director of the George Williams Hooper Memorial Foundation for Medical Research in the University of California.—Dr. Carl Friedrich Meyer and Ernest Linwood Walker, have been appointed associate professors of tropical medicine, and Dr. Charles W. Hooper, fellow in research medicine in the same foundation. The headquarters of the foundation are to be in special laboratories in the Medical School Building of the University of California, San Francisco.—Dr. Wilbur A. Sawyer, Berkeley, director of the California State Hygienic Laboratory, has been appointed lecturer on hygiene and preventive medicine in the University of California Medical School.

CONNECTICUT

Personal.—Dr. Albert C. Thomas, New Haven, has been confirmed by the executive council as superintendent of the Foxboro, Mass., State Hospital.

State Society Semi-Annual Meeting.—The Connecticut Medical Society at its semi-annual meeting, October 1, was the guest of the New London County Medical Society. Luncheon was served at the Norwich State Hospital and in the afternoon Drs. Rush W. Kimball and Patrick J. Cassidy, Norwich, reported their experiences in Europe, and after a literary program, a clinic was held on the common types of mental diseases.

Small-Pox Costs One Town Over \$1,000.—The annual reports for the town of Montville show that the town paid \$1,077.75 for the luxury of a small-pox outbreak during October, 1913, which also caused great inconvenience to the town and which, according to the health officer, Dr. Morton E. Fox, Uncasville, was largely due to failure to report the original cases. One member of the affected families escaped, having been vaccinated.

DELAWARE

State Society Election.—The one hundred and twenty-fifth annual meeting of the Delaware State Medical Society was held in Wilmington, October 12 and 13. Dr. George Frank Jones, Georgetown, presided in the absence of the president, Dr. William P. Orr, Jr., Lewes. The following officers were elected: president, Dr. Henry W. Briggs, Wilmington; vice-presidents, Drs. James T. Massey, Viola; Roland G. Paynter, Georgetown; secretary, Dr. George W. K. Forrest, Wilmington (reelected); treasurer, Samuel Mumford, Wilmington (reelected), and delegate to the American Medical Association, Dr. William Marshall, Jr., Milford.

GEORGIA

Medical Research Club Formed.—The Medical Research Club of Atlanta has been organized with the following charter membership: Drs. Asa G. DeLoach, Elmore C. Thrash, Archibald B. Elkin, James D. Manget, Allen H. Bunce, Thomas R. Beech, Herbert L. Reynolds, Worth E. Yankey and Hansell Greshaw.

Personal.—Dr. John Peebles Proctor, Athens, has returned from abroad.—Dr. Clarence M. Paine, Atlanta, has been reappointed a member of the State Board of Medical Examiners, representing the homeopathic school.

IDAHO

Personal.—Dr. Frederick W. Didier has been appointed examining surgeon for the United States Pension Office with headquarters at Priest River.—Dr. Charles B. Shirley was recently presented with a silver loving cup by a number of his women patients at Weiser.

New State Society Officers.—The twenty-second annual meeting of the Idaho State Medical Association was held at the Owyhee Hotel, Boise, October 8 and 9 under the presidency of Dr. Frank W. Mitchell, Blackfoot, who delivered an address on "Medical Jurisprudence." Lewiston was selected as the place of meeting for next year, when the Society will meet in connection with the state associations of Oregon and Washington. The following officers were elected: president, Dr. John N. Alley, Lapwai; vice-president, Dr. Fern M. Cole, Caldwell; secretary-treasurer, Dr. Edward E. Maxey, Boise (reelected); Dr. Lucien P. McCalla, Boise, delegate to the American Medical Association, and Dr. Maurice H. Tallman, Boise, alternate.

ILLINOIS

Addition to Beverly Farm.—Dr. William H. C. Smith, superintendent of Beverly Farm, private home and school for nervous and backward children, Godfrey, has recently added twenty rooms to his institution, which is now able to accommodate seventy-five children.

Personal.—Dr. John T. Montgomery of Charleston has received the endorsement of the Republican party as candidate for the position of trustee of the state university. As the university has a medical department it seems most important that there should be a medical man on the board.

Hospital Notes.—Contracts have been awarded for the construction of the Lutheran Hospital, Moline. The institution when completed will cost about \$40,000, and work is to be started on the building by April 1, 1915.—The Contagious Disease Hospital, given at a cost of nearly \$100,000 to the Evanston Hospital by James A. Patten, was opened for inspection October 24 and 25. The building is four stories in height, 121 by 42 feet; of brick, fireproof and will accommodate fifty patients.

Health Poster Competition.—The City Club of Chicago has started a health poster competition and will award three prizes of \$50, \$30 and \$20, respectively, for the three best designs submitted. Each drawing must be 23 by 29 inches, with a 2-inch margin and executed in two colors for zinc etching reproduction. The drawings are to be delivered not later than October 30 to Charles Yeomans, secretary, Committee on Public Health, City Club, 315 Plymouth Court, from whom full details of the contest may be obtained.

Chicago

Personal.—Dr. John Steele Sweeney and Dr. Alfred N. Moore have returned from abroad.—Dr. Ernest A. Loewinger is doing volunteer work and is one of the surgeons in the Imperial and Royal Military Hospital, Budapest.—Dr. Robert T. Gillmore has been elected president of the Chicago Gynecological Society.—Dr. and Mrs. Harry B. Bailey, Chicago, have returned from Europe.

War Surgery.—A meeting of the Chicago Medical Society, October 21, was devoted to army surgery. The speakers and their subjects were: Colonel William Stephenson, M. C., U. S. A., chief surgeon of the Central Division, on "War from the Standpoint of the Military Surgeon"; Lieutenant Colonel Jacob Frank, surgeon general of Illinois, on "Perforating Wounds of the Abdomen"; Colonel Patrick J. H. Farrell, formerly commander-in-chief of the order of the Army of the Philippines, on "The Military Surgeon on the Firing Line."

INDIANA

No Typhoid in Columbus.—Since the new filtration plant was established in Columbus a year ago there has not been a single case of typhoid fever where city water was used; nor has there been a single case of contagious disease in the quarter ended September 30.

Personal.—Dr. Charles S. Goar, Indianapolis, who was injured by being struck by a train a year ago, has been awarded \$8,000 damages.—Physicians of Fort Wayne gave

a banquet, October 2, in honor of Dr. Allen Hamilton who has just returned from abroad.

Arrangements Made for District Nurses.—The city board of health, Indianapolis, has organized a new department of nursing which will be in connection with the medical inspection of the public schools. Student nurses from the hospitals of the city will be employed to follow up those cases of children excluded from public schools on account of disease.

NEW MEXICO

State Tuberculosis Foes Meet.—The annual meeting of the New Mexico Society for the Study and Prevention of Tuberculosis was held in Albuquerque, October 7, and the following officers were elected: president, Dr. Abraham G. Shortle, Albuquerque (reelected); vice-presidents, Drs. Frank E. Mera, Santa Fe; James W. Laws, Lincoln; and William T. Brown, Watrous; secretary, Dr. LeRoy S. Peters, Albuquerque; treasurer, Dr. Robert E. McBride, Las Cruces.

State Association Meeting.—The thirty-third annual meeting of the New Mexico Medical Society was held in Albuquerque, October 5 to 7, under the presidency of Dr. Henry B. Kauffman, Albuquerque, who delivered an address on "Eugenics." Las Vegas was selected as the meeting place for 1915. The following officers were elected: president, Dr. William T. Joyner, Roswell; vice-president, Dr. Evelyn F. Frisbie, Albuquerque; Dr. Clifford S. Losey, East Las Vegas and Dr. Charles A. Frank, Albuquerque; secretary, Dr. Robert E. McBride, Las Cruces (reelected); treasurer, Dr. Frank E. Tull, Albuquerque; delegate to the American Medical Association, Dr. W. R. Tipton, East Las Vegas; alternate, Dr. Samuel D. Swope, Deming.

NEW YORK

Clubhouse Nearly Ready.—The Rochester Medical Society expects to move into its new clubhouse, recently purchased for \$35,000, about November 1.

Personal.—Dr. Robert Reid, Schenectady, has resigned to accept a position on the house staff of the Albany City Hospital.—Dr. Raymond Sanderson, Canandaigua, bacteriologist of Ontario County, has been appointed to a similar position for Ulster County, with headquarters at Kingston, and has been succeeded by Dr. Wm. A. Bing, Albany.

New York City

Doctors Visit Quarantine.—At the opening of the new quarantine laboratory, recently, five hundred physicians were the guests of Dr. Joseph H. O'Connell. The laboratory is located on Staten Island and is perfect in its equipment for bacteriological and research work.

Personal.—Dr. Mary M. Crawford, Brooklyn, sailed for Europe, October 17.—Dr. Ebba A. Dederer has been appointed physician for the Brooklyn Society for the Prevention of Cruelty to Children.—Dr. and Mrs. William Morris Butler, Brooklyn, have returned from the orient.

Millions for Health.—The health commissioner, Dr. Sigismund S. Goldwater, has submitted to the budget committee of the estimate board, his estimate of the amount required for the conduct of his department during the ensuing year. He will require \$3,621,738.58, which is \$87,498.08 more than the allowance for last year.

St. Luke's Day Celebrated.—A service was held in Calvary Church on the evening of October 18, St. Luke's Day, the "Feast of the Beloved Physician," at which time addresses were made by Dr. Howard A. Kelly of Baltimore and Dr. William H. Jeffries, St. Luke's Hospital, Shanghai. The physicians and nurses of the city were especially invited.

Columbia Faculty Changes.—Assistant professor, A. M. Muller of the department of anatomy, has resigned to accept the professorship of anatomy in the College of Physicians and Surgeons, New York City.—Dr. James W. Jobling has resigned as assistant professor of pathology to accept the professorship of pathology in the Vanderbilt University, Nashville, Tenn.—Dr. Cornelius Copley has been appointed professor of laryngology to succeed the late Dr. William K. Simpson.—Dr. Alwin M. Pappenheimer has been appointed assistant professor of pathology, vice Dr. James W. Jobling, resigned.—Dr. Homer F. Swift has been appointed associate professor of the practice of medicine, succeeding Dr. Warfield T. Longcope, promoted.

NORTH CAROLINA

Fire at Sanatorium.—On October 1, fire partially destroyed the Winyah Sanatorium, Asheville. The patients were

removed without casualty and the burned building will be at once replaced with a new and larger structure.

Obstructor of Vaccinator Imprisoned.—Peter Jeffries, a colored man of Raleigh, was convicted and sentenced to thirty days on the county chain gang for obstructing Dr. Albert S. Root, city physician, who was vaccinating the sister of the prisoner, a pupil in the city schools.

Personal.—Dr. Stephen J. Hawes, Dover, has returned after several months spent in New York City and Rochester, Minn., and has moved to Lumberton. —Dr. Lewis B. McBrayer, superintendent of the State Sanatorium for Tuberculosis, has accepted the office of executive secretary of the State Red Cross Seal committee.

State Board of Health Meeting.—The North Carolina State Board of Health, on October 6, held its first meeting in the new offices of the Board, on the fourth floor of the Supreme Court Building, Raleigh. It was decided to ask the legislature for funds for the erection of an additional building at Sanatorium to provide more room for tuberculosis patients.

OHIO

Personal.—Dr. Wilbert A. Hobbs, East Liverpool, is seriously ill with septicemia in St. Vincent's Hospital, Cleveland. —Dr. William R. Kelly, McConnelsville, the oldest practitioner in Morgan County, was made a life honorary member of the Morgan County Medical Society at its meeting October 2. —Dr. Rufus C. Pennywitt, Dayton, is ill at his home with appendicitis. —Dr. Charles Betts, Toledo, has returned from Europe.

CR.—Eugene F. McCampbell.

Health Officers Confer.—Health officers from the southern part of the state met with the State Board of Health at Cincinnati October 22 and 23. This conference is provided for by the laws of Ohio, and all local health organizations are required to send a representative. Various subjects relating to rural sanitation were discussed, but especial interest attached to the conference on account of the proposed change in the health laws. The proposed bill providing for whole-time district health officers was discussed before the conference by the secretary and executive officer, Dr. Eugene F. McCampbell, Columbus. Two illustrated lectures were given on the evening of October 23, one on tuberculosis and occupational diseases, and the other on communicable diseases and their control by local health officers.

Milk-Borne Typhoid.—Two outbreaks of typhoid fever, one clearly traceable to the milk-supply and the other suspected of being transmitted by milk, have occurred recently in Ohio. The first occurred in Lima, where five deaths among the customers of a dairy where a case of typhoid fever was present, were shown to have been infected by the milk. The outbreak occurred in Bucyrus and comprised eighteen cases. This outbreak was investigated by Dr. Walter E. Obetz, assistant epidemiologist of the State Board of Health. Dr. Obetz found that this outbreak possessed many of the characteristics of a milk outbreak, but final proof was lacking. The suspected dairy used the commercial method of pasteurization and this was changed to the "holding" method when the milk was suspected.

Cincinnati

Want Board of Medical Directors Reestablished.—Seven physicians called on Mayor Speigel October 5, to discuss the appointment of an advisory board of three for the new city hospitals. Of the deputation Dr. Simon P. Kramer urged the reestablishment of the board. Dr. Charles A. L. Reed and Dr. Allen B. Thrasher expressed dissatisfaction with the present manner of handling affairs, but did not definitely recommend the reestablishment of the board. Drs. Frank B. Cross, Benjamin K. Rachford, John C. Oliver and Christian R. Holmes were opposed to the reappointment of the supervising board.

Personal.—After many years of service Dr. Robert Sattler has resigned as senior ophthalmologist to the Cincinnati Hospital, and Dr. Victor Ray has been promoted to fill the vacancy. Dr. Frederick W. Lamb has been appointed junior ophthalmologist. —Dr. Louis Stricker has been appointed by the commissioners of Hamilton County as special clerk in charge of the relief for the indigent blind. The position pays \$1,200 a year. —Dr. Charles P. Kennedy has resigned as assistant superintendent of the Tuberculosis Hospital. —Dr. Archibald I. Carson has resigned as librarian to the Academy of Medicine, a position he has held for many years. —Dr. Rufus A. Van Voast has been accepted as a volunteer surgeon at the front region in the French army. —Drs. Henry Kennon Dunham and Julien E. Benjamin have

returned from abroad. —Dr. John M. Withrow has resigned as a member of the board of hospital commissioners. —Dr. Georges Rasetti is at present attached to an army hospital in France.

PENNSYLVANIA

Portrait of Old Member Presented.—At a meeting of the Berks County Medical Society in Reading, October 12, a portrait of Dr. Liggett, who was a practitioner of Birdsboro half a century ago, was presented to the society.

Diphtheria Closes Schools, Churches and Motion-Picture Theaters.—Diphtheria has broken out in Seward, Chester, Hazleton, Greensburg, Ridgway, Wilkes-Barre and Philadelphia. Schools, churches and theaters have been closed in Seward and Ridgway. Elsewhere cases appear to be scattering.

Personal.—Dr. James M. Knowlton and family, Tarentum, has been obliged to go to the Southwest on account of his health, and will locate in Premont. —Dr. Charles R. Holshue, Shamokin, who has been seriously ill with septicemia due to a wound in the thumb during a surgical operation, is reported to be convalescent. —Dr. Gaily B. Dunkle, Washington, fractured his right arm near the wrist, while cranking his automobile, October 7. —Dr. William J. Condon has been appointed medical inspector of the public schools of Susquehanna and surrounding districts. —Dr. John B. McAneny, Johnstown, and Dr. and Mrs. Patrick H. Kearney, Scranton, have returned from abroad.

Philadelphia

Personal.—Dr. Henry K. Gaskill has been appointed assistant professor of dermatology in Jefferson Medical College. —Dr. Rufus Cole of the Rockefeller Institute will deliver the Frederick A. Packard lecture of the Philadelphia Pediatric Society in the College of Physicians, November 10. —Dr. Frederick P. Gay of the University of California will deliver the Samuel D. Gross lecture before the pathological society at the College of Physicians, October 22.

Tuberculosis Conference.—The North Atlantic Tuberculosis Conference held its session at the Bellevue Stratford, October 16, under the auspices of the National Association for the Study and Prevention of Tuberculosis. Dr. Charles William White of Pittsburgh presided, and the speakers at the morning session were Charles M. DeForest, the salesmanager of the Red Cross seals; State Charities Aid Association of New York; Frank H. Mann, of the New York Committee on the Prevention of Tuberculosis; Mrs. Theodore N. McLaughlin, secretary of the Red Cross Chapter, District of Columbia. At the conclusion of the morning session the first annual meeting of the New Jersey Anti-Tuberculosis League was held at the Hotel Walton in the form of a luncheon. At the afternoon session Dr. George M. Kober of Washington, was the chief speaker. At 5 o'clock the delegates attended a reception at the Phipps Institute and later a dinner at Kuglers. At the evening session Miss Ellen M. La Motte of Baltimore, A. W. MacDougall, secretary of the Newark Bureau of Associated Charities, and Bailey B. Burritt, chief director of the New York Association for improving the condition of the poor, were speakers.

VERMONT

State Physicians Meet.—The Vermont State Medical Society held its one hundred and first annual meeting in Rutland, October 8 and 9, under the presidency of Dr. A. Lawrence Miner, Bellows Falls, who delivered an address on "Malignant Disease." Dr. John George Adami, professor of pathology in McGill University, Montreal, delivered an address on "The Evolution of Infection." The following officers were elected: president, Dr. William W. Townsend, Rutland; vice-president, Dr. William G. Ricker, St. Johnsbury; secretary, Dr. James M. Hamilton, Rutland (reelected); treasurer, Dr. Charles F. Dalton, Burlington (reelected). The Society, by a vote of 73 to 1, passed a resolution to use all honorable means to obtain legislation to provide for the maintenance of the Vermont Medical College, Burlington, its discontinuance being characterized as a state calamity. At the meeting of the House of Delegates, a committee on health and public instruction was chosen, consisting of Dr. Edward H. Ross, St. Johnsbury; Dr. George G. Marshall, Rutland; Dr. Grace W. Sherwood, St. Albans; Dr. John H. Blodgett, Bellows Falls, and Dr. George I. Forbes, Burlington. The House of Delegates also elected Dr. Stanton S. Eddy, Middlebury, as counselor for the first district; Dr. Clayton W. Bartlett, Bennington, for the second district; Dr. Robert M. Wells, Orleans, for the third district, and Dr. George L. Bates, Morrisville, for the fourth district.

VIRGINIA

Free Literature on Scarlet Fever and Diphtheria.—The State Board of Health announces for the benefit of physicians and parents that bulletins giving bedside directions for the care of scarlet fever and diphtheria are available for free distribution.

Measures Against Diphtheria.—The State Board of Health October 3 issued a bulletin requesting the cooperation of the school officials and teachers in the attempt to reduce the time the public schools are closed in various parts of the state on account of diphtheria among the pupils. Stress is laid on the importance of examining the children presenting suspicious symptoms and excluding them from the schools until they are pronounced free from danger. The state has made arrangements for distributing diphtheria antitoxin at a very low cost and without delay.

Personal.—Dr. Samuel Childs Mitchell, formerly head of the Medical College of Virginia, Richmond, was installed as president of the Delaware College, Newark, October 10.—Mr. William Schenck, the eldest son of Dr. Powhatan S. Schenck, health commissioner of Norfolk, has been elected president of the student body of the Medical College of Virginia and University Medical College, Richmond.—Dr. Frank H. Hancock has been appointed assistant health commissioner of Norfolk, vice Dr. Claude D. J. MacDonald.—Drs. C. J. Andrews, George T. Myers and J. C. Fleet have also been appointed assistants in the department of health of Norfolk.—Dr. Cullin S. Pitt has been designated as physician of the Richmond and Westhampton colleges.

New Society Meets.—The Dinwiddie County Medical Society recently organized held a meeting in Petersburg, October 9, with Dr. William C. Powell presiding and Dr. George S. Fultz, Butterworth, secretary and treasurer. A committee on health and legislation was appointed consisting of Dr. W. Preston Hoy and Dr. Hampden A. Burke, Petersburg, as secretary. A committee was also appointed to consider the advisability of establishing a medical library in Petersburg. This committee consists of Dr. William F. Drewry, Robert A. Martin, Elisha L. McGill, Dibre C. Mayes, Church Road, and Julian R. Beckwith.

CANADA

Personals.—Dr. Harry Morell, Regina, editor of the *Western Medical News*, is a member of the Canadian Expeditionary troops which recently arrived in England.—Dr. Andrew Macphail, Montreal, editor of the *Canadian Medical Association Journal*, is a member of a class of physicians taking instruction in Toronto in field ambulance work.

Professor of Anatomy Called to the Colors.—Dr. Robert W. Geddes, professor of anatomy in McGill University, has been called by the British war office to take command in one of the home regiments—senior major in the Northumberland Fusiliers. Dr. Geddes was in charge of the McGill University provisional regiment. He was a reservist of the British army, having served with distinction in the South African War. He became professor of anatomy in McGill in 1912.

Typhoid Inoculation of the Canadian Troops.—Dr. Chas. A. Hodgetts, Ottawa, medical advisor to the Canadian Conservation Commission, had charge of the inoculations of the Canadian troops while in camp at Valcartier. Among his assistants were Dr. Theodore A. Lomer, medical officer of health, Ottawa; Dr. Harry Morell, pathologist to the Regina General Hospital, and Dr. Robert E. Wodehouse, district medical officer of health, Port Arthur, Ont. There were required about forty-five thousand injections and in this large number there were reported no cases of serious or severe constitutional reactions, nor any infected arms.

Hospital News.—Plans for a new \$200,000 hospital at Hamilton, Ont., have been prepared. The building will be three stories high and will accommodate 500 patients. The citizens recently refused to vote \$125,000 for the purposes of improving the present city hospital.—A new hospital was recently opened at Grassy Lake, Alberta. It is to provide accommodation for homesteaders in the district. The medical superintendent is Dr. L. K. Poyntz.—In the province of Saskatchewan there are twenty-six hospitals having a total bed capacity of 1,100 to 1,200 beds. A movement is on foot to have rural municipalities join together in establishing hospitals. To the hospitals the provincial government gives 50 cents a day for each patient and \$1.50 is allowed for patients who are unable to pay anything.—Plans have been prepared for an addition to the Hospital for the Insane at

Battleford, Sask. More accommodation is required for male patients as there has been a rapid increase in the number of these admissions. There are to be three additional units.—The Vancouver General Hospital recently opened a new surgical ward containing twenty-five beds.

GENERAL

Tri-State Association Meeting Place.—The executive council of the Tri-State Medical Association of the Carolinas and Virginia, announces that it has accepted the invitation of the Medical Society of the State of South Carolina and of Charleston County, to hold its seventeenth annual meeting in Charleston, S. C., Feb. 17 and 18, 1915.

Tri-State Society Meeting.—The Tri-State Society of Iowa, Illinois and Missouri held its twenty-second annual session at Des Moines, October 13 and 14 and the following officers were elected: president, Dr. Lewis Schooler, Des Moines; vice-president, Dr. Clarence L. Wheaton, Chicago; and secretary, Dr. Charles H. Parkes, Chicago. The next meeting will be held in Chicago in September, 1915.

The Clark Epigram.—The Department of Health of Iowa is immortalizing the name of Governor Clark by spreading broadcast an epigrammatic expression recently made by him at a meeting of the State Board, of which he is ex-officio a member. The accompanying illustration shows a button embodying the epigram—"THE



HEALTH AND HAPPINESS OF THE PEOPLE ARE PARAMOUNT TO EVERY OTHER ISSUE." The button, which is being freely distributed through Iowa, is lettered in black on an orange background, and measures 1 1/4 inches in diameter. Governor Clark's epigram reminds us of a similar expression of Benjamin Franklin, "Public health is public wealth"; of Disraeli's, "The care of the public is the first duty of the statesman"; and of Gladstone's, "In the health of the people lies the strength of the nation." The distribution of this button is one of the efforts of the Iowa board to arouse the public to a realization of the importance of health.

WAR NOTES

Spain Will Receive Wounded.—Spain has sent offers to France to receive 30,000 wounded in her hospitals. Of these, the hospitals of Madrid will accommodate 6,000.

Guarding Against Cholera.—The Swiss Government on October 16 officially declared quarantine against Russia, Austria, Servia and Galicia, on account of cholera.

Cholera Immunization.—It is reported that 120,000 packages of cholera serum have been received at the front from Vienna and that the troops are being inoculated by regiments.

Dogs Wanted to Aid in Recovering the Wounded and Sick in the Field.—Our German exchanges contain appeals to owners of dogs that could serve in this way to donate them to the cause.

Physician Receives War Decoration.—The iron cross has been bestowed on Dr. Max Kirschner of Munich serving at the German front with the third Bavarian Feldpionier company.

Scarcity of Physicians in Eastern Prussia.—The medical chamber of east Prussia calls for medical aid as the smaller towns have been drained of physicians, and expert medical skill is particularly needed to ward off epidemic diseases liable from the east.

Transport of the Wounded.—On September 28, the first trainload of wounded soldiers, mostly from the battlefield of the Aisne, were brought from the South to Scotland and conveyed to Number 2 Hospital at Grayleith. Stobhill Hospital, Glasgow, has received 300 wounded soldiers.

Tetanus Antitoxin for Allied Troops.—Philadelphia newspapers announce that an order for six thousand packages of tetanus antitoxin has been placed by the British government, with a local firm of chemists. The antitoxin is to be used especially for the French and English troops, who are especially exposed in the trenches.

Drugs Wanted.—Due to the embargo placed on drugs by continental countries, South American and English firms are having difficulty in securing supplies. In *Daily Consular and Trade Reports* for October 13, four English, two Russian and one Spanish firm request American companies to quote prices on various drugs and chemicals.

Exclusion of Alien Students Henceforth from German Universities.—The *Deutsche med. Wchnschr.* states that hitherto no discrimination has been made against foreign students at German universities except a comparatively small number of Russian students without due credentials. But this exclusion will now be extended to British, French, Belgians and Japanese.

British Physicians Join Expeditionary Force.—The Secretary of State has appointed Sir John Rose Bradford, Sir Wilmot Herringham and Sir Almroth Wright, consulting physicians with the British Expeditionary Force in France, with the rank of colonel. He has also decided to appoint a special sanitary committee to advise the council on any questions pertaining to the health of the troops.

Transport of Wounded in France.—Arrangements are being made by the Red Cross Society for the equipment of a mobile unit consisting of a field hospital, ten ambulances, subsidiary motor cars and motor trucks, with a staff of four physicians and a complement of nurses and orderlies. The purpose of this unit will be to provide an intermediate halting place between the fighting line and the base hospitals and a means of transport in either direction.

The Red Cross Ship.—After landing units at Bordeaux for the French army, the American National Red Cross Ship *Red Cross*, sailed for Rotterdam and there landed units for Germany, Austria and Russia. Two units arrived in Vienna, October 14, one of which proceeded immediately to Hungary and the other was assigned to duty in the suburbs of Vienna.—The hospital ship which sailed from New York via the Mediterranean for Serbia, reached Nish safely on October 15. Dr. Edward W. Ryan is in charge of the Servian unit.

More Medals Sent to the Melting Pot.—Kobert of Rostock has repudiated not only the British but the Russian medals that have been presented to him. Neisser of Breslau has donated his Cavendish medal to the Red Cross. The family of Emil du Bois Reymond has donated the Helmholtz gold medal, of an intrinsic value of \$423, to the relief fund, saying that this medal, representing the highest appreciation in his own land of the scientific achievements of du Bois Reymond, is honored more by devoting it to the service of the country than by preserving it.

Prevention of Disease in Active Service.—Sir William Osler, who has recently been called to the colors in addressing officers and men in the military camp, recently remarked that the army did not march on its belly, but on its brain. The cilia are a more important enemy than bullets. Typhus, malaria and cholera were not likely to be encountered, but dysentery, pneumonia and typhoid were the scourges to be feared. Of these, dysentery could be prevented by boiling the water and typhoid fever by antityphoid inoculation, but pneumonia was more difficult to prevent on account of coughs, colds, exhaustion and exposure, all of which lower vital resistance.

LONDON LETTER

LONDON, Oct. 9, 1914.

The War

Preparations of all kinds for this great war, to which we are about to send a large force instead of the present one of about 200,000 men, are being made "without haste, and without pause." The call to arms has quickly been responded to and the half million of men required for the new army have been obtained without difficulty. A further army of a second half million has begun to be organized. Almost the whole of the young men of the country are coming forward with enthusiasm. The physique of the new army is excellent, though some of its members are very youthful and require seasoning. Their housing in a country which maintains only a small standing army presents some difficulties. Huts accommodating from twenty to fifty men are being erected on an extensive scale, which will be much warmer in winter than tents. Timber hospitals are also being erected. The vaccination and inoculation against typhoid fever of men going to the front have been performed on a large scale.

The effects of the war on the life of the country are widespread. In the medical profession they are noticeable in many ways. The staffs of hospitals are depleted, and visiting surgeons and physicians have undertaken duties usually performed by residents. Many of the students have gone to the front, some as dressers, but the greater number have enlisted in the fighting ranks. The output of medical literature is much diminished as shown in the contraction of all the medical journals. The program of the Royal Society of Medicine shows a great reduction in the number of meetings for

the forthcoming session. An unfortunate result of the war is the closure of the Polyclinic. This unique and useful institution was founded fifteen years ago mainly by the efforts of the late Sir Jonathan Hutchinson. Its object was to provide postgraduate instruction for physicians in the form of lectures and demonstrations. The annual subscription was \$5, and about 1,000 members were obtained. This was not sufficient to pay the expenses; appeals for donations were made on more than one occasion and generously responded to by a limited number of physicians. A scheme, which appeared to be successful, was in process of being carried out for the abolition of the debt of the institution. When the war broke out financial losses, actual and prospective, rendered many unable to carry out promises of help. Moreover, the support of American and colonial visitors fell to the vanishing point.

At the front the supply of surgeons, dressers and nurses is ample, indeed more than sufficient. Two well-known surgeons, Sir Anthony Bowlby and Mr. Makins, have been appointed consultants attached to General French's staff as colonels. Both have experience of military surgery in the South African War. Their duties will be to visit any part of the line where a second opinion on a case may seem desirable. Some difficulties are being experienced in bringing down a large number of wounded from the rail heads or clearing hospitals to the base. The journeys are often long and interrupted. This is due to the limited number of lines, which have also to be used for the dispatch of reinforcements, ammunition and food. Some improvements are about to be made in French railway rolling stock, and by the arrival of a complete ambulance train which is being fitted in England. A heavy list of casualties has occurred among the men of the Army Medical Corps.

PARIS LETTER

PARIS, Oct. 1, 1914.

Extraction of Bullets by Means of Electromagnets

During a recent session of the Académie des sciences, Professor Dastre reported the results of his attempts at the Desgenettes Hospital in Lyons to facilitate the extraction of bullets by the use of high power electromagnets. The German bullets have a nickel-steel jacket which can be attracted by a powerful magnet, causing a swelling under the skin which thus makes it easy to cut down on the ball. If the bullet is engaged in the muscles, under the influence of the electromagnet, it moves toward the surface, revealing its presence, first by a characteristic pain and then by a swelling of the skin.

The Costume of the Voluntary Nurses

Complaints with regard to the conduct of certain volunteer nurses of the Red Cross, who, for the sake of attracting attention, wore their nurses' costumes in the streets, have been laid before the minister of war. He has consequently forbidden the wearing of nurses' costumes outside of the institution to which the wearer belongs, giving as his reason the necessity of protecting from undeserved criticism the real nurses, who shun publicity and who by their devoted services have won the respect and gratitude of the medical profession, the sick and wounded soldiers and the public.

Hospital Ship for the Convalescent Wounded

One of our great transatlantic liners, the *Gascogne*, has just been transformed into a hospital ship for the convalescent wounded. It has been completely disinfected and painted. More than 450 convalescents removed from auxiliary or temporary hospitals can be made comfortable in it. The criticism has been made that the convalescents might not have sufficient air space in their cabins. This is not so. The great saloons, smoking-rooms, music rooms and reading-rooms have been made over into dormitories, in which new wooden beds have been placed, separated by considerable intervals. The saloons, which are near the upper bridges, are reserved for the wounded who walk with greater difficulty. The first cabins are for convalescent underofficers. The second cabins and saloons have been made into dormitories and likewise the immense steerage space from which the upper bunks have been removed, making ample air-space. Dining-rooms have been installed on the bridge of the first deck, which in a few days will be glazed. A physician major and an auxiliary physician will remain permanently on the *Gascogne* to watch over the condition of the wounded convalescents. If, as seems probable, the experiment with the *Gascogne* is successful, another liner, the *Bretagne*, may likewise be transformed into a hospital ship.

Appointment of Adjunct Directors of the Health Service

The increasingly heavy task imposed on the directors of the regional services of health by the numbers of the wounded French and German soldiers, would be too great for them if they did not have assistance. The minister of war is convinced of the necessity of the directors keeping track of the execution of their orders and of the organization and functioning of the sanitary establishments so as to be assured that all needs are satisfied everywhere and that the wounded are receiving necessary attention and are surrounded by the care to which they are entitled. As soon as the administrative demands of the service became so pressing as not to leave the directors free to move about it became urgent to appoint adjunct directors who are to be especially charged with such oversight and control. They are to be in particular, intermediaries between the directors of the regional services of health and the various societies of the Red Cross and of private philanthropy, whose efforts they will coordinate.

Society Formed to Care for the Wounded in Transit

There has just been organized under the patronage of the French press an Oeuvre des trains de blessés intended to give the numerous wounded passing through the stations of Paris and the vicinity, the care, food and clothing of which they are in need.

Present-Day Modifications of Military Surgery

September 28, Professor Delorme, medical inspector-general of the service of military health, read before the Académie des Sciences a report of the inspection of army hospitals and ambulances which he had made by order of the minister of war. Delorme emphasized particularly the modifications of military surgery necessitated by the character of modern battles which are distinctly siege operations. While in ordinary battles the first line of medical assistance is sufficient, thanks to the soldiers' individual packets of dressings, to assure sufficient asepsis of wounds to permit the transportation of the wounded to distant hospitals. At present in the sanitary formations of the front, one finds patients who have lain in the trenches without care, sometimes for four or five days. The original asepsis no longer exists. The wounds are infected and purulent and transportation to a distance would be dangerous. Surgery must be performed at the front. While bullet wounds, thanks to the swiftness of the projectile and the small area of the wounds, heal quickly without special care, the case is otherwise with artillery wounds, which are large and in which foreign matter, such as earth and fragments of clothing introduced by the projectile, too often cause diffuse phlegmons, gangrene and tetanus. It is necessary to operate rapidly, to extract the balls and the fragments of shells and to disinfect the wounds carefully. The rôle of the ambulances and hospitals of the firing-line has been greatly increased.

The greater number of the deaths among the wounded at present are attributed to gaseous gangrene and to tetanus, which are almost unknown to ordinary surgery and were very rare at the beginning of the war. Against gaseous gangrene, injection of hydrogen peroxid may be used successfully. After having determined the limits of the gangrenous tissue, there is a chance of arresting the progress of the trouble by making a circle of injections of from 40 to 100 c.c. of hydrogen peroxid about a centimeter apart around the limb. A few centimeters above this circle of punctures and in the intervals of the first, another circle may be made and a third still higher. These injections are to be renewed as often as necessary. In cases of fulminating gangrene the injections should be made in the aponeuroses of the affected parts after removing the necessary tissue.

As for tetanus, reliance must be placed on prevention rather than cure. As Dr. Roux, director of the Pasteur Institute, says, the antitetanus serum, of which 160,000 doses have been delivered to the army since the beginning of the war, ought to be placed specially in the first-line ambulances and not in those of the rear. This serum is only preventive, it is not curative. It acts on the tetanus toxin only while it is still in suspension in the blood; it is powerless when the toxin has reached the nerves. One should not wait, therefore, until nervous complications have manifested themselves, for then either the intoxication is violent and death is inevitable, or it is slight and cure may be effected without the sacrifice of any of the precious serum which can be usefully employed in saving other lives. In cases of declared tetanus, one may use intraspinal injections of magnesium sulphate, which arrest the contraction of the jaws and make it possible to feed the patient.

Dr. Delorme showed some simple apparatus which he had made to replace the old metal splints used in the treatment of fractures. These are pliable sheets of metal cut in suitable lengths for use on the arm or leg, thickly padded with cotton on one side and furnished with straps. The splint is placed on the wounded limb on which tampons of wadding have been so placed as to assure a pressure capable of replacing the fragments of bone. The splint is then bent so as to fit the wounded limb and the straps are fastened. This apparatus is light, occupies a minimum amount of space and is consequently easy to transport and permits considerable economy of time while reducing the chance of infection.

Marriages

PASSED ASSISTANT SURGEON THOMAS WRIGHTSON RAISON, U. S. N., to Miss Margarita L. Higgins of Denver, Colo., in New York City, September 18.

SURGEON GEORGE ROTHGANGER, U. S. N. (retired), San Francisco, Cal., to Mrs. Elizabeth Chamberlain Bull of Oakland, Cal., September 5.

CARL JOSEPH GEIGER, M.D., Syracuse, N.Y., to Miss Catherine Reid of River John, N. S., in Providence, R. I., October 7.

THOMAS LAMAR WILLIAMS, M.D., Mt. Carmel, Pa., to Miss Ellen MacFayden of Newark, N. J., in New York City, October 6.

JUDD HARRIS KIRKHAM, M.D., to Miss Ora Edyth Burrell, both of Anamoose, N. Dak., in Minot, N. Dak., September 14.

WILLIAM J. SHENBERGER, M.D., New Bridgeville, Pa., to Miss Ida Bell Smith of Windsor, Pa., in Baltimore, October 1.

THOMAS JAMES GLENN, M.D., Covington, Ky., to Miss Margaret Downs of Cincinnati, in Ludlow, Ky., October 7.

JOHN HENRY CUNNINGHAM, M.D., Boston, to Miss Theresa van der Hueber Ingersoll of New York City, October 8.

MILTON EBEN BLANCHARD, M.D., Los Angeles, Cal., to Mrs. Jennie DeMott of Colorado Springs, Colo., September 27.

HENRY JOHN CONNER, M.D., Duluth, Minn., to Mrs. Margaret Deary of Spokane, Wash., in Chicago, October 8.

CARL HAYES LUND, M.D., Douglas, Ariz., to Miss Marjory Lawrence Gilson of Arlington, Mass., September 25.

ELIOT SANBORN COGSWELL, M.D., Hartford, Conn., to Miss Ruth B. Merriam of Kingston, Mass., September 22.

WILLIAM SHULER JUDY, M.D., to Miss Margaret Eulalie Wiggins, both of St. George, S. C., September 10.

THEODORE CHAPIN BEEBE, M.D., Boston, to Mrs. Ethel H. Rust of Boston, in London, England, August 22.

CYRUS F. NEWCOMB, M.D., Champaign, Ill., to Miss Geraldine Bullard of Mechanicsburg, Ill., October 7.

WILLIAM FREDERIC MOORE, M.D., Lanerch, Pa., to Miss Marjory Thornton of Philadelphia, October 21.

HENRY JAMES GRAHAM, M.D., to Mrs. Theresa Tromp Jernegan, both of South Bend, Ind., October 8.

CHARLES EVERETT OATES, M.D., Little Rock, Ark., to Miss Ilse Frischmeyer of Austin, Texas, recently.

EDWARD MARTIN COLIE, JR., M.D., to Miss Elinor Newman Tidden, both of New York City, October 5.

EDMUND WILLIAM BUTLER, M.D., San Francisco, to Miss Wilma Jacobs of Alameda, Cal., October 19.

WILLIAM C. BRIDGE, M.D., to KATHERINE PLEAVIN, M.D., both of Elgin, Ill., in Chicago, October 7.

HENNING THEODORE MOSTROM, M.D., Geneva, Ill., to Miss Mildred Hinds of Lena, Ill., September 30.

JOHN MACLACHLAN, M.D., Cleveland, Ohio, to Miss Edna Milliken Sloan of Pittsburgh, October 3.

GEORGE ROMEO FUGINA, M.D., Madison Lake, Minn., to Miss Thro of Mankato, Minn., recently.

LEO SEBASTIAN SCHUMACHER, M.D., to Miss Gertrude O'Reilly, both of Cleveland, October 7.

RANSOM SMITH ROBERTSON, M.D., to Miss Mary P. Doing, both of Brooklyn, N. Y., October 6.

JOSEPH W. HUTCHINSON, M.D., to Miss Vera Surface, both of Marquette, Neb., October 7.

LUCAS SMITH HENRY, M.D., to Miss Marguerite Allewell, both of Syracuse, N. Y., October 6.

Deaths

James Gregory Mumford, M.D. Harvard Medical School, 1890; eminent as a surgeon and writer of surgical text-books and monographs; died at his home in Clifton Springs, N. Y., October 19, from heart disease, aged 50. He was born in Rochester, N. Y., Dec. 2, 1863, and took his academic course at Harvard University from which he received the degree of A.B. in 1885. For twelve years after his graduation Dr. Mumford practiced in Boston and served on the surgical staff of Carney and the Massachusetts General hospitals. In 1895 he was made assistant in surgery, and in 1902 instructor in surgery in his Alma Mater. In 1912 he moved to Clifton Springs, N. Y., where he became physician-in-chief of the Clifton Springs Sanatorium and Hospital.

He was a Fellow of the American Medical Association, American Surgical Association and American College of Surgeons, and a member of many surgical and medical societies, both of this country and abroad. In 1892 and 1893, Dr. Mumford served as surgeon to the Naval Brigade, Massachusetts Volunteer Militia and was later commissioned as a first lieutenant in the Medical Reserve Corps, U. S. A. Among his chief contributions to the literature are his *Practice of Surgery*, which appeared in 1910; *Surgical Memoirs* in 1908; *One Hundred Surgical Problems* in 1911; *A Doctor's Table Talk* in 1912, and many articles and essays in medical journals; Dr. Mumford also was the author of the introductory article on *History of Surgery* in Keen's *System of Surgery* and the editor of Harrington's *History of the Harvard Medical School*.

Jerome Keating Bauduy, M.D. Jefferson Medical College, 1863; a member of the Missouri State Medical Association; formerly president of the St. Louis Medical Society; a veteran of the Civil War; for twenty-four years physician and chief to St. Vincent's Asylum, St. Louis, and at one time consulting physician to the St. Louis Hospital for the Insane; professor of nervous and mental diseases and medical jurisprudence in Missouri Medical College and Washington University for nearly thirty years; professor emeritus of psychological medicine and diseases of the nervous system in Washington University; author of a number of books on nervous diseases; died in the East about October 11, aged 74.

George Brown Reynolds, M.D. Washington University, Baltimore Md., 1872; a Fellow of the American Medical Association; formerly chief surgeon of the Police Department of Baltimore; a member of the board of managers of the Consumptive Hospital of Maryland and physician to the Boys' Home and Children's Aid Society of Baltimore; a Confederate veteran; while answering an emergency call at the University Club, Baltimore, October 2, died suddenly from heart disease, aged 68.

Thomas Opie, M.D. University of Pennsylvania, Philadelphia, 1861; surgeon in the Confederate service during the Civil War; one of the founders, professor of obstetrics and gynecology and for thirty-three years dean of the College of Physicians and Surgeons, Baltimore; formerly surgeon to the Baltimore City and Bayview hospitals and consulting gynecologist to the Hebrew Hospital, Baltimore; died at the home of his daughter in Washington, D. C., October 5, aged 74.

Matthew Rippey Carson, M.D. Albany, N. Y. Medical College, 1857; director of the Canandaigua, N. Y. Hospital of Physicians and Surgeons and a member of the staff of the Thompson Memorial Hospital, Canandaigua; whose fiftieth anniversary as a member of the Ontario County Medical Society was celebrated in October, 1909; a charter member of the Canandaigua Society of Physicians and Surgeons; died at his home in Canandaigua, October 6, aged 78.

Frank Melvin Thoms, M.D. University of Michigan, Ann Arbor, 1891; formerly a member of the American Medical Association; for twenty-three years a practitioner of Lansing, Mich.; physician to the State School for the Blind in that city; died at his home in Lansing, October 6, from disease of the liver, aged 44.

Oscar Weston Hulin, M.D. Columbus (Ohio) Medical College, 1892; a Fellow of the American Medical Association; for twenty-one years a beloved and respected practitioner of Greenford, Ohio; died at his home in that place, October 6, from typhoid fever complicated by pneumonia, aged 48.

Charles Henry Lewis, M.D. University of Michigan, Ann Arbor, 1866; a member of the medical staff of the Jackson City Hospital; died at his home in Jackson, Mich., October 7, from heart disease, aged 74.

Charles Reuel Gibson, M.D. Medical School of Maine, Brunswick, 1875; a Fellow of the American Medical Association; a member of the Surgical Staff of the Cottage Hospital, Woodsville, N. H.; physician to the Grafton County Hospital and local surgeon to the Boston and Maine Railroad; president of the Woodsville Guaranty Savings Bank; died at his home in Woodsville, about October 4, aged 61.

Luther Walker Jenkins, M.D. Rush Medical College, 1911; assistant surgeon U.S.P.H.S. and assigned to duty on the U. S. Revenue Cutter *Manning*; a Fellow of the American Medical Association; aged 33, was drowned with five other men when a boat from the *Manning* was swamped in Unalga Pass off Cape Sariches, Alaska, while bringing off to the cutter a light-house employee who was ill.

David Thomas Smith, M.D. University of Louisville, Ky., 1870; lecturer on medical jurisprudence in his Alma Mater; for several terms a member of the school board of Louisville; died at his home in that city, October 1, from uremia, aged 73. At a meeting of the Louisville Society of Medicine, October 6, resolutions of sympathy and regret of the death of Dr. Smith were adopted.

Philip Mooney, M.D. University of Vermont, Burlington, 1882; a member of the Massachusetts Medical Society; and once vice-president of the Essex North District Medical Society; a member of the visiting staff until 1903 and later consulting physician to the Addison Gilbert Hospital, Gloucester; died at his home in Gloucester, Mass., September 27, from heart disease, aged 58.

Frederick B. Read, M.D. Jefferson Medical College, 1867; a member of the Medical Society of the State of Pennsylvania and local surgeon of the Pennsylvania System at Osceola Mills, Pa.; while on his way to Pittsburgh to attend the meeting of the State Medical Society was seized with pneumonia at the home of his sister in Ebensburg, Pa., and died there, September 30, aged 68.

Thomas B. McKown, M.D. Atlanta, Ga., Medical College, 1885; a Fellow of the American Medical Association; surgeon to the Durham Coal and Coke Company; Lookout Mountain Coal and Coke Company and Georgia Penitentiary; and a practitioner of Pittsburg, Ga.; died at the home of his mother in Jonesboro, Ga., September 24, aged 54.

Jefferson Davis Robertson, M.D. University of Louisville, Ky., 1891; a member of the Kentucky State Medical Association; formerly city physician and one of the founders of the City Hospital of Paducah, Ky.; was found dead in his office in Paducah, Ky., October 4, from heart disease, aged 52.

Frithiof N. H. Gyllenhammar, M.D. St. Louis College of Physicians and Surgeons, 1891; a member of the South Dakota State Medical Association; for twenty-four years a practitioner of Gayville, S. Dak.; died in a hospital in Sioux City, Ia., September 28, from diabetes, aged 57.

James Fry Armour, M.D. New York University, New York City, 1867; a member of the Medical Society of the State of Pennsylvania; for nearly half a century a practitioner of Williamsburg, Pa.; died at his home, September 29, from acute dilatation of the heart, aged 71.

Harry Newmayer, M.D. University of Pennsylvania, Philadelphia, 1911; a member of the Medical Society of the State of Pennsylvania, and formerly physician to the Jewish Hospital and Children's Hospital, Philadelphia; died at his home in that city, September 28, aged 25.

Samuel S. Shively, M.D. Eclectic Medical Institute, Cincinnati, 1881; twice coroner of Wyandotte County, Kan.; died at his home in Kansas City, Kan., October 7, aged 75.

Robert Burns, M.D. Rush Medical College, 1881; formerly of Wichita, Kan.; died in Riverside, Cal., July 12, from tuberculosis, aged 62.

Pompey Davis, M.D. Memphis Hospital Medical College, Memphis, Tenn., 1906; died at his home in Hickory Valley, Tenn., recently.

Henry W. Granel, M.D. Eclectic Medical Institute, Cincinnati, 1875; died at his home in Linden Beach, Ohio, July 3, aged 66.

Hiram W. Lindsey, M.D. Eclectic Medical Institute, Cincinnati, 1885; died at his home in Moorefield, Ohio, August 7, aged 60.

Horatio Craig, M.D. Albany, N. Y. Medical College, 1878; died at his home in Ballston Spa, N. Y., July 13, aged 60.

Oscar S. Pratt, M.D. University of Buffalo, N. Y., 1871; died at his home in Canaseraga, N. Y., August 8, aged 78.

Dwight Gustavus Hubbard, M.D. University of Buffalo, N. Y., 1869; died at his home in Buffalo, July 25.

A miniature reproduction of a full-page advertisement of "Hemo" appearing in a Milwaukee paper. The original covered 341 square inches.

In a letter addressed to a physician-stockholder, the statement is made: "Our Hemo-Malted Milk has never had and never will have an equal as a builder of blood, nerve and tissue . . . it will build tissue, nerve and blood in less time than any other food heretofore known."

Disregarding the question whether or not this is a stock jobbing scheme or whether the purchase of the stock is a good investment, there is another side to the matter. It must be evident that the public is not getting a square deal when physicians are financially interested in the products they prescribe for, or recommend to, the sick. Whatever the value of the Thompson products, the method of exploitation and the attempts on the part of the company to get physicians financially interested in its ventures, are to be deprecated. If laymen of a speculative turn of mind wish to invest in the stock of companies putting out "bottled energy," "blood builders" and "nerve repairers" that is their business, but it is certainly neither conducive to the scientific practice of medicine nor to the interest of the public for physicians to be financially interested in products of this sort.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted on request.

WHERE IS THIS JOURNAL?

To the Editor:—I am desirous of subscribing to a medical journal, weekly or monthly preferably monthly, which will give in brief concise, accurate form whatever is new and worth knowing in the lines of advance in medicine, surgery and therapeutics; whatever would be of interest to a general practitioner.

I am anxious to subscribe to a medical journal which will cover the field in medicine and surgery somewhat like the *Literary Digest* covers the field in what is going on in the world of secular news.

In brief what I want is a journal coming not too frequent so that a busy physician will have time to go thru it carefully and that will keep you up to date in advance in medicine and surgery, something that a careful study of without unnecessary wrinkles and details and not too voluminous will keep a general practitioner in a way up to date. This journal should record and explain epoch making advances in the entire field of medicine and surgery but should not tire a man to death by going into minute details in laboratory technique, etc. etc. etc. of reactions and tests that the general practitioner is not interested in, just so he knows that there is such a test or reaction and knows the purpose thereof and is satisfied to leave the details to the specialists in that line.

Can and will you oblige me by giving me the name or names of one or more journals published for just this purpose also address of the publishers. Also whether weekly or monthly and annual price thereof if you can.

GEORGE H. PFLUEGER, M.D., North Crystal Lake, Ill.

TREATMENT OF MYDRIASIS

To the Editor:—Your column of Queries and Minor Notes has not been the least interesting of the different departments of *THE JOURNAL*. I want to ask a question about a case that has been bothering me a little. The patient was hit in the right eye about two months ago with a baseball. After all the inflammation had cleared up it left the iris in a condition of constant dilation (evidently a paralysis of the third nerve supplying the circular fibers). It will contract under the influence of physostigmin. Now I would like to know what the chances are for regeneration of that nerve, and what line of treatment would be the most advisable. I have been giving the patient applications of the faradic current, but see no improvement yet. I might say there is no evidence of any other involvement of the ocular nerves.

W. L. ROBINSON, M.D., Naramata, B. C.

ANSWER.—Dilatation of the pupil may be caused either by irritation of the pupil-dilating center, which might occur early in an inflammation, or by paralysis of the pupil-contracting center from pressure on the third nerve at the base of the brain or in the orbit. Mydriasis also occurs as the result of interruption in the transmission of light impulses from the retina, as for example, in optic-nerve atrophy, of any other involvement of the ocular nerves; it is understood from our correspondent's statement there is no evidence stood that both vision and accommodation in this eye are normal. The causes of paralytic mydriasis are numerous, but in this particular case in which one eye alone is affected,

and the cause known to be a direct blow on the eye, it would seem quite evident that the lesion is in the orbit, and probably some direct pressure on the branch of the third nerve in this region. Local daily applications of about five minutes' duration, with the galvanic current, of ten milliamperes' strength (the negative pole applied around the orbit), in conjunction with ascending doses of nuxvomica, will be the most efficacious method of bringing about a regeneration of the nerve.

ARTICLES ON TUBERCULOUS PERITONITIS

To the Editor:—Please cite for me some literature on tuberculous peritonitis, with special reference to unusual manifestations of the disease, and differential diagnosis.

X. Y. Z., Fort Dodge, Iowa.

ANSWER.—The following is a list of references to work on this subject:

- Mangiagalli, L.: Tuberculous Peritonitis with Effusion in Pregnant Women, *Monatschr. f. Geburtsh. u. Gynec.*, 1912, xxxvi, Internat. Cong. Festschr.; abstr., *THE JOURNAL*, Oct. 26, 1912, p. 1554.
- Falk, E.: Experimental Roentgenotherapy of Tuberculous Peritonitis, *Berl. klin. Wchnschr.*, Nov. 11, 1912; abstr., *THE JOURNAL*, Dec. 14, 1912, p. 2192.
- Brückner, G.: Cure of Tuberculous Peritonitis by Injection of Nitrogen into Peritoneal Cavity, *Berl. klin. Wchnschr.*, Jan. 19, 1914; abstr., *THE JOURNAL*, Feb. 28, 1914, p. 736.
- Tuberculous Peritonitis, *Therapeutics*, *THE JOURNAL*, April 25, 1914, p. 1328.
- Sheffield, H. B.: Clinical Interpretation of Chronic Abdominal Enlargement in Children with Special Reference to New Differential Sign Between Rachitis and Tuberculous Peritonitis, *Med. Rec.*, New York, Aug. 30, 1913.
- Kaspar, F.: Foreign Body Tuberculous Peritonitis, *Deutsch. med. Wchnschr.*, September, 1913, Nos. 5 and 6.
- Spencer, W. C.: Four Cases of Tuberculous Peritonitis and Salpingitis with Menstrual Complications, *Brit. Med. Jour.*, Jan. 10, 1914.
- Tweedy, E. H.: Female Sterility as Salient Feature of General Tuberculosis of Peritoneum, *Med. Press and Circ.*, Jan. 15, 1913.
- Pantzer, H. O.: How Does Laparotomy Cure Tuberculous Peritonitis? *Am. Jour. Obst.*, February, 1913.
- Mouisset, F., and Gaté, J.: Chronic Jaundice from Old Tuberculous Peritonitis, *Lyon méd.*, March 2, 1913; abstr., *THE JOURNAL*, April 19, 1913, p. 1266.

PRACTICAL TEST FOR LEAD

To the Editor:—Please give the most practical test for the finding of lead in the urine and oblige.

C. S. J.

ANSWER.—According to F. C. Wood, *Chemical and Microscopical Diagnosis*, p. 582, the electrolytic test is the most reliable. He says:

"Two hundred and fifty c.c. of the urine to be tested are placed in a porcelain dish and 2 c.c. of chemically pure sulphuric acid are added. The mixture is heated gently, and about 5 grams of potassium persulphate are added in small portions with occasional stirring. The fluid is gradually brought to the boiling point, and in about half an hour the contents of the dish will be almost colorless from the destruction of the organic matter. If the fluid blackens, it is necessary to continue the heating, with the addition of more acid in a Kjeldahl flask until the color is discharged. The heating is continued until the liquid is concentrated to about 50 c.c., and it is then placed in a platinum dish at the negative pole of a galvanic circuit, and a current passed through it for about eight hours. The current may be obtained either from the street mains or from a storage battery, or from a couple of primary cells. After the current has been passed a sufficient time, the platinum dish is washed in distilled water, nitric acid is added, and after removing the excess of acid by heating, a stream of hydrogen sulphid is passed through the liquid." If lead is present the stream of hydrogen sulphid gas will produce a black coloration or precipitate.

STATES LICENSING RETIRED MEDICAL OFFICERS

To the Editor:—A medical officer resigned or retired from the Army, the Navy, or the Public Health Service—does any state recognize such a one as exempted from passing the State Medical Board in order to practice medicine? If so, what states? The foregoing are questions I should like to have answered in *THE JOURNAL* if of sufficient merit to you to do so, with my initials only.

W. E. K.

ANSWER.—The five states in which the licensing boards are empowered to license without further examination retired medical officers of the U. S. Army, Navy and Public Health Service are Alabama, California, Colorado, Illinois and North Dakota.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ARKANSAS: Little Rock, November 10-11. Sec., Dr. W. S. Stewart, 404 Citizens Bank Bldg., Pine Bluff. Homeopathic, Little Rock, November 12. Sec., Dr. Scott C. Runnels, 900 Scott St., Little Rock. Eclectic, Little Rock, November 10-11. Sec., Dr. C. E. Laws, Ft. Smith.

CONNECTICUT: New Haven, November 10-11. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven. Homeopathic, New Haven, November 10. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven. Eclectic, New Haven, November 10. Sec., Dr. T. S. Hodge, 19 Main St., Torrington.

FLORIDA: Palatka, December 2-3. Sec., Dr. E. W. Warren, 102 Front St., Palatka.

LOUISIANA: New Orleans, October 29-31. Sec., Dr. E. L. Leckert, New Orleans.

MAINE: Portland, November 10-11. Sec. Dr. Frank W. Searle, 776 Congress St., Portland.

MISSISSIPPI: Jackson, October 27-28. Sec., Dr. E. H. Galloway, Jackson.

NEBRASKA: Lincoln, November 11-12. Sec., Dr. H. B. Cummins, Seward.

NEVADA: Carson City, November 2. Sec., Dr. S. L. Lee, Carson City.

PENNSYLVANIA: Philadelphia, December 1-3. Sec., Dr. N. C. Schaeffer, Harrisburg.

SOUTH CAROLINA: Columbia, November 9. Sec., Dr. A. Earle Boozer, 1806 Hampton St., Columbia.

TEXAS: Waco, November 10-12. Sec., Dr. W. L. Crosthwait, Amicable Bldg., Waco.

Massachusetts May Report

Dr. Walter P. Bowers, secretary of the Massachusetts State Board of Registration in Medicine, reports the oral, practical and written examination held at Boston, May 12-14, 1914. The total number of subjects examined in was 13; total number of questions asked, 70; percentage required to pass, 75. The total number of candidates examined was 45, of whom 24 passed, including 4 non-graduates, and 21 failed, including 3 osteopaths and 6 non-graduates. The name of one of the colleges was not recorded. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
George Washington University.....	(1909)	77.8	
Hahnemann Medical Coll. and Hosp., Chicago.....	(1910)	80.2	
College of Phys. and Surg., Boston.....	(1905) 82.4; (1913) 75,	75.5	
Harvard University.....	(1911) 78.6; (1913)	77.5	
Tufts College Medical School.....	(1913)	79.6, 78.2	
John A. Creighton Medical College.....	(1912)	76.2	
Dartmouth Medical School.....	(1897)	75.5	
Albany Medical College.....	(1913)	75	
Jefferson Medical College.....	(1891)	75	
University of Vermont.....	(1902) 82; (1906) 75; (1908)	76.1	
University of Toronto.....	(1912)	78.3	
Montreal School of Med. and Surg.....	(1913)	75.6	
University of Camerino, Italy.....	(1908)	79	
University of Geneva.....	(1913)	76.2	
Non-graduates.....	75.6, 76.9, 77.2, 77.2		

College	Year Grad.	Per Cent.
Chicago College of Medicine and Surgery.....	(1913)	71.4
University of Louisville.....	(1912) 70.7,	68
Eastern University, Baltimore.....	(1913)	61.2*
Maryland Medical College.....	(1913)†	
College of Phys. and Surgs., Boston.....		
.....(1908) 70.9; (1911) 70.6; (1913)	60.1, 73.9	
Royal University of Naples.....	(1911)	59.9
Syrian Protestant College, Leirut.....	(1890)	44.6
Non-graduates.....	41.8, 52.6, 56.7, 65.7, 67,	71.5

* Reported as not recognized by the Maryland State Board of Medical Examiners.

† Examination not completed.

Montana July Report

Dr. William C. Riddell, secretary of the Board of Medical Examiners of Montana, reports the written examination held at Helena, June 30-July 2, 1914. Total number of subjects examined in was 10; total number of questions asked, 50; percentage required to pass, 75. The total number of candidates examined was 20, of whom 17 passed and 3 failed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
College of Phys. and Surgs., Chicago.....	(1894) 86.8; (1908)	75.5	
Rush Medical College.....	(1894) 88.2; (1899) 81.5; (1913)	75.7, 82.6	
State University of Iowa, College of Medicine.....	(1909)	75.2	
College of Physicians and Surgeons, Baltimore.....	(1911)	75.9	
Kansas City Medical College.....	(1905)	78.1	

St. Louis University.....	(1913)	80.8
Washington University.....	(1913)	83.1
University of Minnesota.....	(1911)	83
John A. Creighton Medical College.....	(1914)	77.5
Willamette University.....	(1912)	79
Jefferson Medical College.....	(1914)	82.7
Medico-Chirurgical College of Philadelphia.....	(1908)	79.4
University of Toronto.....	(1914)	78.8

FAILED

Cleveland Homeopathic Medical College.....	(1905)	69.3
Medico-Chirurgical College of Philadelphia.....	(1900)	68.6
Marquette University.....	(1913)	73.1

Maryland Homeopathic June Report

Dr. O. N. Duvall, secretary of the Maryland Homeopathic Board of Medical Examiners, reports the written examination held at Baltimore, June 15, 1914. The total number of subjects examined in was 8; total number of questions asked, 80; percentage required to pass, 70. The total number of candidates examined was 3, all of whom passed. Two candidates were licensed through reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
University of Michigan, Homeo. Med. Coll.....	(1913)	80.4	
Hahnemann Med. Coll. and Hosp., Phila. (1913)	75.1; (1914)	84.1	

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Eclectic Medical College, Cincinnati.....	(1913)	Penna.
Eclectic Medical Institute, Cincinnati.....	(1909)	Penna.

Minnesota June Report

Dr. Thomas S. McDavitt, secretary of the Minnesota State Board of Medical Examiners, reports the oral, practical and written examination held at Minneapolis, June 2-5, 1914. The total number of subjects examined in was 13; total number of written questions asked, 80; percentage required to pass, 75. The total number of candidates examined was 31, all of whom passed. Twelve candidates were licensed through reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Northwestern University.....	(1914) 83, 84, 91		
University of Illinois.....	(1914)	83	
University of Minnesota (1913) 75; (1914) 81, 83, 84, 84, 84, 84, 84, 85, 85, 86, 87, 87, 88, 88, 88, 88, 88, 89, 89, 90, 90, 91, 91.			

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Bennett Medical College.....	(1913)	Illinois
Northwestern University.....	(1913)	Illinois
Rush Medical School.....	(1886) Maryland; (1913)	Illinois
Keokuk Medical College, Coll. of Phys. and Surgs..	(1903)	Iowa
Johns Hopkins University.....	(1906)	New Jersey
Univ. of Michigan, Dept. of Med. and Surg. (1904)	(1911)	Michigan
John A. Creighton Medical College.....	(1910)	Nebraska
Eclectic Medical College, Cincinnati.....	(1910)	Ohio
Memphis Hospital Medical College.....	(1911)	Iowa
Marquette University.....	(1913)	Wisconsin

New Hampshire July Report

Mr. Henry C. Morrison, superintendent of Public Instruction of the New Hampshire State Board of Medical Examiners, reports the written and practical examination held at Concord, July 1-2, 1914. The total number of subjects examined was 21, of whom 18 passed and 3 failed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Medical School of Maine (1913) 75; (1914) 75, 75, 79.			
Harvard University (1894) 75; (1909) 86; (1914) 75, 79, 80.			
Tufts College Medical School.....	(1914)	75, 75	
Dartmouth Medical School.....	(1913) 88; (1914)	76, 82	
University and Bellevue Hosp. Med. School.....	(1912)	78	
Jefferson Medical College.....	(1914)	84, 90	
University of Vermont.....	(1913)	76	

FAILED

College of Physicians and Surgeons, Baltimore.....	(1908)	62
National University, Athens.....	(1897) 43; (1906)	41

Book Notices

THE PHILOSOPHY OF RADIO-ACTIVITY, OR SELECTIVE INVOLUTION. By Eugene Coleman Savidge, M.D. Cloth. Price, \$1.50 net. Pp. 151, with illustrations. New York: William R. Jenkins Company, 1914.

This book will tax the mentality of those who read it, for there seems to be no solution of the author's system. Some of the philosophic statements are certainly novel. The author speaks of the compression of space into matter, but by what process he does not indicate. "For our purpose ether is space. Compressed ether is compressed space. An atom of radium is a compression of an equivalent of 226 atoms of hydrogen. Hydrogen, our lightest atom known, is itself a compression of ether, or space in its ultimate extension. Matter is therefore made from ether (or space)." In the same way he tells us that velocity is compressed duration. Such ideas are expressed in language the meaning of which proves difficult for the average reader to grasp. Of this the following may serve as an example:

"Thus behind the electron of the atom of the nebular gas, glowing millionfold over the firmament, is the Great Elusive Something That Changes, which is being coiled into denser and denser atoms, until—in million millions of years the celestial becomes terrestrial, and the densest of all atoms, uranium, stands as sire to the whole unrolling progeny of radio-activity.

"The mystery of the coiling and the mystery of the uncoiling are finite when compared with the infinite mystery of the Great Elusive which is being coiled and uncoiled continually."

Or in other words, as Lewis Carroll would say,

'Twas brillig and the slithy toves,
Did gyre and gimble in the wake.

A CLINICAL STUDY OF THE SEROUS AND PURULENT DISEASES OF THE LABYRINTH. By Dr. Erich Ruttin, Privatdocent in the Otological Clinic, University of Vienna. With a Foreword by Professor Dr. Victor Urbantschitsch. Authorized Translation by Horace Newhart, A.B., M.D., Instructor in Otology, University of Minnesota. Cloth. Price, \$2 net. Pp., 232, with 25 illustrations. New York: Rebman Company, 1914.

The translation of Ruttin's monograph on diseases of the labyrinth should be well received by otologists. The subject matter embraces a detailed description of the diseases, the functional manifestations of the normal and diseased labyrinth, the various clinical aspects, and therapeutic considerations. Appended are over a hundred case histories. The illustrations are good.

MODERN MEDICINE: ITS THEORY AND PRACTICE. In Original Contributions by American and Foreign Authors. Edited by Sir William Osler, Bart., M.D., F.R.S., Regius Professor of Medicine in Oxford University, England, and Thomas McCrae, Professor of Medicine in the Jefferson Medical College, Philadelphia. Second Edition. Volumes 2 and 3. Price, \$5 each. Philadelphia: Lea & Febiger, 1914.

These volumes sustain the high standard of the first volume in this revision. The topics considered are among the most important in the whole field of medicine. Attention may be called especially to the exposition of diseases of metabolism in Volume 2 and the work on diseases of the stomach in Volume 3. In this volume the discussion on the existence and character of the functional diseases of the stomach is very valuable. The tendency to ignore the functional affections of the stomach has been increased by the brilliant work of the surgeon, but it should not be forgotten that much of this surgical work becomes necessary because disturbances of function have been neglected or misinterpreted. Volume 2 describes the diseases caused by protozoa, including syphilis. A large part is devoted to the consideration of metabolic affections, with an exhaustive review of metabolism in general. Among other topics is considered the question of vegetarianism and it concludes, quoting Taylor, that the land at present under cultivation could not produce enough vegetable albumin to sustain the human race. This argument seems highly fallacious since flesh albumin must also be derived from the land. Gout is discussed by Fitcher in an interesting article, and the consideration of diseases of the lungs is important.

GUNSHOT INJURIES: How they are Inflicted. Their Complications and Treatment. By Col. Louis A. Lagarde, U. S. Army Medical Corps (Retired). Prepared under the Direction of the Surgeon-General, United States Army, and Published by Authority of the Secretary of War. Cloth. Price, \$4. Pp., 398, with 157 illustrations. New York: William Wood & Co., 1914.

At this particular time a work on gunshot injuries is of special interest. The author takes up not only bullet wounds made by the ordinary rifle but also wounds made by all kinds of modern firearms. The firearms themselves are first described, then the character of the projectiles, and this is followed by a chapter on the theory of ballistics. Characteristic lesions caused by projectiles with their symptoms and complications are considered in a general way, followed by a detailed treatment of the subject of wounds of special organs and regions. Careful discrimination is made when possible between the conditions which prevail during military service and those of civil life when the same might affect in any way the treatment which should be instituted. The experiences of the leading surgeons of the latest wars are drawn on freely to illustrate the points brought out. The author has done considerable original experimental work which contributes not a little to the elucidation of many mooted points. An interesting chapter on the medicolegal phases of gunshot wounds is added, which might have been better had it been a little more complete. Bullet wounds are sufficiently common in civil life to lend much value to the work to the surgeon in times of peace as well as of war.

A HANDBOOK FOR THE POST-MORTEM ROOM. By Alexander G. Gibson, M.D., F.R.C.P., University Demonstrator in Pathology, Oxford. Cloth. Price, \$1.50. Pp. 140, with 13 illustrations. New York: Oxford University Press, 1914.

This volume is a pocket-size handbook for the guidance of those unfamiliar with the technic of necropsy procedures. The methods described are based on those of Virchow with suitable modifications. The work is designed to cover the technic of ordinary post-mortem examinations as they occur in general hospitals. Special methods for cases of rare occurrence are not discussed. The author gives suggestions for the arrangement of the room for post-mortem examination, including such details as lighting, ventilation, position of sinks, basins, tables, etc. One chapter is devoted to a discussion of instruments and apparatus. The remaining five chapters describe the routine examination of the body and its organs. With true English thoroughness the author gives detailed directions for certain minutiae of the procedure which some would leave to individual initiative. In directions for removing the intestines we read: "Holding up the lower end with the left hand, by a saving movement of the knife held with the flat of the blade at right angles to the axis of the bowel, cut gradually through the mesenteric attachment. . . . As it is severed, the bowel should be put into a bowl placed on the table at the left side of the body." Minute directions, however, are appreciated by the beginner, and those who are but rarely called on to make post-mortem examinations will find this a valuable pocket guide.

DIE KÖRPERLICHE ERZIEHUNG DES KINDES. Von Prof. Dr. Hans Spitz. Paper. Price, 17 marks. Pp. 416, with 194 illustrations. Berlin: Urban and Schwarzenberg, 1914.

In this excellent book the subject of the physical development of the child is discussed from conception to puberty. Such topics as exercise in the first week of life, the correct clothing and shoes at the various ages, the proper posture and gait and the deformities affecting them, and those resulting from improper posture, are discussed at length. The hygiene of the schoolchild and systematic plans for play, work and exercise are carefully considered. The author devotes twenty-four pages with illustrations to a discussion of the various types of seats and desks used in the school-room and their effect on the child's development. Although nothing especially new is presented to the reader, nevertheless the subject is so thoroughly covered and the text so amply illustrated that the work will be found valuable not only by the physicians but by teachers and educated parents as well.

Medicolegal

Defense Rights of Member Under By-Laws of Medical Association

(*Penhall vs. Minnesota State Medical Association (Minn.)*, 148 N. W. R. 472)

The Supreme Court of Minnesota reverses a judgment rendered in favor of the defendant association, which was sued for moneys expended by the plaintiff for counsel fees, etc., in defending a malpractice suit the defense of which he claimed the association was obligated under its by-laws to conduct. The court holds that the defendant's officers were mistaken in assuming that its by-laws did not cover claims arising prior to their adoption, for the only exception therein related to causes of action antedating membership in the association, and none other could be implied.

Neither could the by-laws be construed as not imposing any duty or obligation on the defendant's part to defend suits against members, for the purposes of the corporation and the tenor of the by-laws, taken as a whole, led to the opposite conclusion, otherwise the latter would be practically ineffective of beneficial results to members. True, one section, read alone, gave color to the defendant's position, but the other sections must be considered with it, and these unequivocally entitled members to action by the secretary on presentation of the claim, and thereafter to investigation, and, if possible, adjustment by the association, and also, in a proper case, and as expressed in the by-laws, "on conditions" hereinafter specified, "to receive without personal expense herefor," the service and expenses stated. Going down through the by-laws, the conditions referred to were found merely to require presentation of the papers in the litigation to the secretary, and, after performance of certain ministerial duties on his part, the obligation devolved on the defendant's council to investigate the claim made against the member, to adjust it if possible, and, otherwise, to proceed further if it was unjust or the damages demanded were excessive.

The plaintiff, having made due application to the defendant's secretary for assistance, as prescribed in the by-laws, was not required to apply to its council; nor was it necessary for him to give notice of a second action on the same claim after the defendant's refusal to consider his demand with reference to the first, which was dismissed. The defendant having based its refusal of assistance entirely on grounds not involving the merits of the claim against the plaintiff, and the case having been tried and determined solely on such grounds, the question of the burden of pleading and proof on an issue as to whether the character of the claim was such as to entitle the plaintiff to assistance from the defendant was not properly open in this court. Under Section 1 of the defendant's by-laws, entitling members to assistance against malpractice claims on prescribed conditions, and Section 2, making it the duty of the defendant's council to investigate, etc., the burden of pleading and proving that a demand for aid thereunder involved a claim on which the member was not entitled to aid was on the association.

Recognition Refusal of License Obtained in Another State To Evade Requirements

(*People ex rel. Pisani vs. McKelway et al. (N. Y.)*, 148 N. Y. Supp. 818)

The Supreme Court of New York, Appellate Division, Fourth Department, affirms an order denying a motion for a writ of mandamus to compel the respondents, constituting the Board of Regents of the University of the State of New York, to indorse a license to practice medicine obtained by the relator in Michigan. The court says that the relator was an Italian, a graduate in medicine of the Royal University of Palermo, Italy. After coming to this country he became, and continued to be, a resident of Buffalo, N. Y. On inquiry as to the requirements for a medical licensing examination in New York state, he found that, by one of the 'regents' rules, he would be required to take the special subject of second year English, while the state law prescribes

that examinations for medical licenses "shall be exclusively in writing and in English." With a knowledge of these facts, and, apparently as charged in an affidavit filed on behalf of the respondents, on finding that he was unable to enter the medical examination conducted in New York state, he applied to the Michigan State Board of Registration in Medicine for admission to the examinations conducted by it, and, having passed the examination, which was taken in Italian and without his being required to take such an examination in English as required in New York state, he was granted a medical license by the Michigan board. A few days later he made application to the respondents for an indorsement of his Michigan license.

Shortly after receiving this application, which had been indorsed by the Michigan board, the relator was notified by the New York officials that his application had been returned to the Michigan board with the request that it withdraw its indorsement of the application on the ground, as stated in the notification: "(1) That you by going to Michigan for the examination have avoided the specific requirement in this state of which you were notified in May, viz., that in order to be admitted to our medical licensing examination you would have to pass the regents' examination in second year English for foreigners; and (2) because you took the examination in Michigan not in English as required by the statute of this state and are not eligible to have your license indorsed." Thereafter the Michigan board complied with this request, and withdrew its indorsement of the relator's application.

The court holds that the relator's attempt to evade the respondents' requirements preliminary to an examination and the further statutory requirement that such examination must be in the English language was a sufficient reason for their refusal to indorse his license in the proper exercise of the discretion given them by the statute. The language of the statute is permissive only, and not obligatory, which provides that applicants with licenses from other state examining boards registered by the regents as maintaining standards not lower than here prescribed may, without further examination, and on submitting such evidence as the regents may require, receive from them an indorsement of their licenses or diplomas conferring all rights and privileges of a regents' license issued after examination.

Nor was the relator entitled to an indorsement of his Michigan license by reason of the reciprocity agreement, so-called, entered into in behalf of the authorized officials of New York state with the official board of Michigan. That authorized the return to the Michigan board of its indorsement for reconsideration, and it, concurring in the propriety thereof, formally withdrew its certification. Acting within the agreement, the respondents properly refused indorsement of the relator's license.

Fright as an Element of Damages

(*Goddard vs. Watters (Ga.)*, 82 S. E. R. 304)

The Court of Appeals of Georgia, in affirming a judgment sustaining a demurrer to a petition in which a woman sought to recover damages for fright alleged to have caused her to miscarry, says that fright may be considered an element of damages where there is physical injury attending the cause of the fright, or, if no physical injury, where the fright is of such a nature as to produce physical or mental impairment directly and naturally resulting from the wrongful act. But to recover damages on account of physical injuries resulting from fright, where there is no actual immediate personal injury, it must appear that the injuries were the natural and proximate result of the fright or shock, and that the defendant could or should have known that the act producing the injuries would with reasonable certainty cause such a result. It must also appear that the injuries resulted from such gross carelessness, coupled with a knowledge of the probable physical results to flow therefrom, as amounted to a wilful and reckless disregard of consequences, or that the fright (with its consequences) was brought about by a deliberate and malicious intention on the part of the defendant to injure the plaintiff. The petition did not state such a case.

Society Proceedings

COMING MEETINGS

Amer. Assn. for Study and Prevention of Inf. Mortal., Boston, Nov. 12.
Amer. Public Health Association, Jacksonville, Fla., Nov. 30-Dec. 5.
Medical Society of Hawaii, Honolulu, Nov. 28-30.
Mississippi Valley Med. Assn., Cincinnati, Oct. 27-29.
Southern Medical Association, Richmond, Nov. 9-11.
Southern Surgical and Gynecological Assn., Asheville, N. C., Dec. 15-17.
Virginia Medical Society, Washington, D. C., Oct. 27-30.
Western Surgical Association, Denver, Dec. 18-19.

INDIANA STATE MEDICAL SOCIETY

Annual Meeting held at Lafayette, Sept. 24-25, 1914

The President, DR. JAMES P. SALB, Jasper, in the Chair

Surgical Treatment of Goiter

DR. GEORGE K. THROCKMORTON, Lafayette: In selecting cases for operation, we must first consider the benefit to be derived from operation; also the danger of operation. If we have symptoms of goiter, but no hyperplasia or exophthalmos, we should not operate, for the patient will not receive benefit. In this case we must look to some other ductless gland as the causative factor. The mortality following operation for hyperthyroidism has been very greatly reduced, owing more to the better preparation of patients, time, type, and extent of operation which can be performed in several stages, than to any details of improved technic. The majority of goiter patients can safely undergo thyroidectomy at the time they are seen by the surgeon. Extreme conditions may require medical preparation. In cases of excessive activity we should wait for the symptoms to subside, using medical treatment, giving special attention to the heart, nervous system, intestines and kidneys, as the symptoms may require.

DR. H. H. MARTIN, M.D., Laporte: Every goiter should be operated on after medical treatment has failed, or, as is often the case, after making it actually worse. One great advantage in operating under local anesthesia is the ability of the patient to phonate. When one is operating in the region of the recurrent laryngeal nerve, and its location cannot be definitely determined, the ability on the part of the patient to articulate aids as a safeguard. In cases of mild hyperplasia, producing mild symptoms of hyperthyroidism, the patients will usually recover with rest and proper hygienic treatment. Patients who cannot, by rest and hygienic treatment, be rendered fair surgical risks, should be dismissed rather than allowed to jeopardize the standing of the necessary surgical procedure. Some cases of large goiters can be made more favorable risks by ligating the superior thyroid artery.

DISCUSSION

DR. CHARLES STOLTZ, South Bend: Goiter, toxic and non-toxic, is largely a surgical proposition. Absolute rest in bed is the best preparation for operation. The rational procedure is to do the operation by slow stages, tying off part of the blood-stream, then later a little more, then removing part of the gland, and later, if necessary, removing more.

DR. THOMAS JONES, Anderson: The boundary line between the medical and surgical aspect is hard to follow. The Mayos report 95 to 96 per cent. of cures, but surgery must be resorted to early, if at all.

DR. D. N. EISENDRATH, Chicago: It is important to diagnose the presence of a persistent thymus, either by percussion or by fluoroscopic examination. Treatment should include the removal of the thymus.

DR. MILES F. PORTER, Fort Wayne: Rest in bed is not so much a remedy for the cure of thyrotoxicosis, as it is a help toward making a correct diagnosis and an estimate of the correct line of treatment. Toxic symptoms after surgical interference may be prevented very largely by the delicate handling of the gland during its removal, by shutting off all the circulation in the early stage of the operation, and by using boiling water, or Harrington's solution, as an application over the raw surface from which the gland has been

removed. Postoperative intoxication rarely occurs in the hands of experienced operators.

DR. J. RILUS EASTMAN, Indianapolis: I favor a general rather than a local anesthetic for this operation.

DR. ALBERT E. STERNE, Indianapolis: I, too, favor a general anesthetic. If a patient does not improve in a couple of weeks under enforced rest and quiet, with the use of ice bags, and with as little medication as possible, he is not a good surgical risk; if he does improve, delay the operation, seeking to convert a poor surgical risk into a good one.

DR. A. C. KIMBERLIN, Indianapolis: The resemblance of this condition to incipient tuberculosis, the grosser intestinal manifestations, occupational neuroses, etc., makes early diagnosis difficult. Rest in bed is very good, if the mind as well as the body is at rest.

DR. H. O. PANTZER, Indianapolis: Thorough elimination is very important.

Position of Normal Stomach

DR. BURTON D. MYERS, Bloomington: Forty young adults, from 19 to 26 years of age, twenty-eight men and twelve young women, were given a buttermilk-barium sulphate meal, and their stomachs then examined fluoroscopically. In males, when standing, the average position of the lower border of the stomach was found to be 1 inch below the umbilicus, the extremes being from 1 inch above to 3 inches below this plane. In females, when standing, the lower border of the stomach was found to be 3 inches below the umbilical plane, the extremes being 1½ to 4½ inches below the umbilical plane.

DISCUSSION

DR. A. M. COLE, Indianapolis: Position is not so important as function. With fluoroscopic study we have a much better way of arriving at the question of whether or not we have impaired function. Very few patients need surgical treatment. Put them to bed, give forced feeding and massage; build up their weight, and a great majority of these patients after they have taken on from 15 to 20 pounds will get up and their gastric symptoms will have disappeared.

DR. ALBERT E. STERNE, Indianapolis: We cannot treat these cases in a routine way. If the motor force of the organ is good, the question of position is of comparatively little value, provided the position of the organ does not create any mechanical interference with the neighboring organs.

Early Recognition of Cancer of the Uterus

DR. BERNAYS KENNEDY, Indianapolis: Early diagnosis is the real and practical hope for the cure of cancer. Direct examination of organs is important—no matter what other diagnostic measures are used. An educated medical profession is necessary for the eradication of cancer, and also an educated and interested public. The belief that cancer is not curable by operation is not based on facts. It is the duty of the physician to overcome such prejudice. It is fatal to the patient to wait for physical changes to take place. Better run the risk of an error in diagnosis than to put off an operation until all possibility of removing the cancerous growth has passed.

DISCUSSION

DR. T. W. KELSEY, Attica: Educate the women and the general practitioners to realize their responsibility in this matter, because it is to the general practitioners that the women go first for advice as to these conditions.

DR. ALBERT E. STERNE, Indianapolis: The women who are afraid of cancer, who run to the doctor if they have a "lump" anywhere, practically never develop cancer, because the doctor has found from repeated examinations whether or not a change has occurred, and they have been operated on early, on suspicion. Cancers are cured before they are cancers, clinically, when operation is performed on suspicion. After certainty is established the question of the outcome in any operation is a debatable one. The Abderhalden test is a distinct aid in the treatment of cancer. Though quite as simple as the Wassermann test, it is more open to error, and must be done with nicety and precision.

Abderhalden Test in Pregnancy

DR. JANE KETCHAM, Indianapolis: It is possible to diagnose pregnancy in the obese; it will differentiate the menopause from pregnancy; it will disclose an abdominal tumor and accurately diagnose ectopic gestation from tumors of the adnexa; it will disclose a recent abortion. If the test is positive, it does not establish the diagnosis of pregnancy; but if the test is negative, it may be taken as final that there is no living conception present.

Nitrous Oxid Anesthesia in Obstetrics

DR. ARTHUR E. GUEDEL, Indianapolis: Labor is retarded very little, if at all, as the anesthetic does not produce muscular relaxation beyond that of normal sleep. Therefore, there is no predisposition to post-partum hemorrhage, involution is not delayed, the channels are closed as they should be, and pathogenic bacteria, if present in the birth canal, are not liable to gain entrance into the blood-stream. Its action is rapid and transitory, it is not irritating or unpleasant to inhale; and is less productive of nausea and vomiting.

DISCUSSION

DR. L. PARK DRAYER, Fort Wayne: I do not believe that the Abderhalden test is positive enough as a test of pregnancy.

DR. B. W. RHAMY, Fort Wayne: The greatest objection to the Abderhalden test is that it requires an infinite amount of painstaking care and attention to details, and is reliable only in the hands of an experienced laboratory worker.

DR. W. D. HOSKINS, Indianapolis: My experience in the use of nitrous oxid in obstetrics has been very favorable. It gives relief from pain and accelerates labor without any disastrous results.

Treatment of Cerebrospinal Fever

DR. W. D. HOSKINS, Indianapolis: Antimeningococcus serum is the only reliable treatment, and its efficiency depends largely on the manner in which it is used. The serum should be administered by the gravity method, through the needle used to make the puncture. The dose should be from 30 to 45 c.c. for an adult, and from 15 to 30 c.c. for children. It should be warmed to body temperature and injected slowly. It should be repeated in twenty-four hours, and whether improvement does or does not follow, the serum should be repeated daily for three or four days, then every third or fourth day until all danger of relapse has passed.

DISCUSSION

DR. L. PARK DRAYER, Fort Wayne: I wish to emphasize the importance of early diagnosis by lumbar puncture. Lumbar puncture is also a splendid adjunct in treatment, because it relieves the pressure. If you use serums, change your make frequently—switch your serum after a certain period of time and introduce a new family. We must not say that a cure has been effected after so many doses; we are not sure until the spinal fluid remains meningococcus free.

DR. ALBERT E. STERNE, Indianapolis: Since we have been employing serums of various types, we do not see the damaging sequelae to the nervous system that we used to before the days of serum. It is my habit to make lumbar puncture, even if I have no serum, because it affords relief for the patient.

Specialism: Route to the Hypophysis Cerebri

DR. JOSEPH C. BECK, Chicago: Specialism has made great strides in medicine. The general practitioner of former years is practically impossible in large communities, and possible only in sparingly populated districts. The general surgeon is also being rapidly subsidized into the various surgical branches. Ophthalmology and otolaryngology cannot be considered complete without taking into account the management of the structures within the mouth, the face, neck and brain. Men practicing the above-mentioned specialties are really head and neck specialists, and, while not expected to be expert in the entire domain of head and neck surgery, should at least be prepared to recognize the conditions which are intimately associated with diseases of the eye, ear, nose and throat. The best route to the hypophyseal gland is by way of the nose. The incision is made above the

gingival margin, above the second central incisor, and carried externally to the first molar. The anterior surface of the superior maxilla is exposed in the same manner as when opening the antrum. The tissues as far as the inferior orbital margin and laterally to the zygomatic fossa are all elevated. The entire anterior surface of the antrum is exposed. Then, by means of an electric burr or biting forceps the entire anterior surface of the superior maxilla is taken off. The middle turbinal is then removed. After this the posterior ethmoidal region through the antrum is opened and the posterior ethmoidal cells curetted. The packing, which was inserted into the nose, is then removed and a probe inserted into the sphenoid sinus as a guide. The anterior wall of the sphenoid is then removed in the usual manner by curets and punches. The septum between the two sphenoid sinuses should also be removed. By means of Hirsh's beveled chisel, three incisions are made into the floor of the sella turcica and this little piece of bone lifted off by the same chisels, and removed by breaking it off from its attachment. By means of two Hirsh's angular spatulas, small particles of the thinned-out floor of the sella turcica are removed and the opening further enlarged by sphenoid punches. The dura is now incised with Hirsh's bistoury, and any desired incision made to enlarge the opening by the same instrument. If the growth is a cyst, then it will probably terminate the operative procedure; but if it be a tumor then the same or part of it is removed by punches and curets. A cigaret drain is placed into the sella turcica and led through the antrum. The remaining portion of the incision in the mouth is closed by two or three stitches.

DISCUSSION

DR. E. DEWOLFE WALES, Indianapolis: There is not enough team-play between the specialist and general practitioner. It is very essential for us to know the symptoms of hyperthyroidism, so that we may recognize the infiltration which often takes place in the tonsil, turbinates and adenoid tissue. I have had good success in referring cases of tuberculosis of the glands of the neck to roentgenologists. These patients have all recovered with Roentgen treatment without any further operative measures.

DR. J. F. BARNHILL, Indianapolis: Those who know intimately the anatomy of the part and the cause of the disease ought to follow it to its termination, and do such surgery as should be done. There was a time when the specialist was looked on as a man who dealt with and treated the two cavities in the nose, the larynx and the drum cavity. Very little was said about the mastoid, and also very little about sinus disease. Conditions are different now.

DR. L. D. BROSE, Evansville: Tracheotomy is often needed as a preliminary operation in these cases of goiter, and can be done very easily under local anesthesia.

DR. J. R. NEWCOMB, Indianapolis: Some men believe that brain surgery should be done by the oculist. It may be all right in a large city, but I very much doubt the advisability of an eye surgeon in a small town undertaking an operation on the brain because he finds choked disk, any more than I would expect him to undertake the operative treatment of a case of nephritis on account of the retinal condition.

DR. JOSEPH C. BECK, Chicago: If a man is an ophthalmologist, and at the same time has surgical training in brain surgery, or head and neck surgery, and makes the diagnosis from the fundus findings of an abscess or brain tumor, he could operate. If he is simply a diagnostician of the fundi, he is not the one to operate. The treatment of tuberculosis of the glands of the neck by the Roentgen ray has been a disappointment to me. The patients come back for further treatment because the focus has not been thoroughly removed.

Some Ocular Tumors and Their Lessons

DR. F. C. HEATH, Indianapolis: Different observers have reported varying percentages of recurrence in sarcoma of the choroid, the highest being nearly 60 per cent. One-third are local and general, two-thirds metastatic. After three years these growths seldom return, although one has been noted as late as eleven years. Timely and thorough operation is of great advantage. Is it not possible that the prog-

nosis after such operations may be more favorable than is sometimes supposed?

DISCUSSION

DR. T. C. HOOD, Indianapolis: Tumors of the eyeball are not of unusual occurrence. Fortunately, the globe is so placed that it is more open to palpation and inspection than many other organs of the body; therefore, the early diagnosis of new growths in and about the eyeball presents little difficulty. Their early removal is the only means of conserving sight and often, as in the case of malignant growths, of saving life. The difficulty about these cases is that we do not always see them in the early stages.

DR. ALBERT E. BULSON, JR., Fort Wayne: A very guarded prognosis should be given in these cases, not only as regards recurrence, but also as concerns metastases. I have seen quite a large number of cases of intra-ocular sarcoma during the past few years, the majority of which have been melanotic sarcoma of the choroid, and every one of the patients is dead now. The majority died within eighteen months. Although I enucleated the eye, eight or nine of these cases had recurrence in the orbit; many had metastases in the liver. Regarding glioma, there are a few cases on record in which the patients have lived, but they are very few and far between. I also wish to emphasize the necessity of giving these patients the advantage of operative measures, and of having a Wassermann test made in these cases, because frequently, a tumor will disappear under the influence of salvarsan plus mercury and potassium iodid.

DR. L. D. BROSE, Evansville: My experience coincides with Dr. Bulson's regarding glioma. I have had two patients; both died. My experience with sarcoma has been a little more hopeful than his, however.

DR. F. C. HEATH, Indianapolis: I do not wish to convey the idea that prognosis is not grave in these cases. Of course it is—not only in the growth in the orbit, but also from metastases. The point which I wished to bring out was that the grave side has possibly been overemphasized, and we have been in the habit of looking on these cases as hopeless. I have seen only two cases of glioma. One of these patients had a recurrence, followed by death in a very short time after operation; the other was living a number of years after operation.

Nasal Polypi

DR. GEORGE F. SPOHN, Elkhart: Nasal polypi are the results of a chronic morbid state of the mucous membrane. A large percentage of polypoid patients have been mouth-breathers from childhood. In connection with the necessary surgery, the ideal local treatment is the one that keeps the nares clean all the time. My results with autogenous and stock vaccines have not been satisfactory. Some patients do not seem to improve on any treatment. They merely hold their own. Many of these patients have chronic anemia, which has been relieved by large doses of arsenic. I believe arsenic will yield results in these obstinate cases; but it must be given in large doses, intravenously or hypodermatically.

DISCUSSION

DR. W. S. TOMLIN, Indianapolis: There is usually lack of drainage and ventilation in the nasal cavity in these cases, which has caused a sinusitis, resulting in polypi formation. Nothing very much can be done in these cases until the poor ventilation and drainage have been remedied. My experience with vaccines has been to some extent satisfactory, but their value is in direct proportion to the thoroughness with which I have previously operated.

DR. J. D. HEITGER, Bedford: One of the important things in this connection is the humidity of the air we breathe. In our homes it is about 50. In winter the outdoor air has a humidity of between 20 and 30 degrees. This continued series of traumatic shocks to the nasal mucous membrane has a very damaging effect, particularly when there is any obstruction to proper breathing.

DR. D. W. STEVENSON, Richmond: The system of air-washers in some of our public schools is very good. By this method the humidity is increased. I have found the use of vaccines of great help.

KENTUCKY STATE MEDICAL ASSOCIATION

Sixty-Fourth Annual Meeting, held at Newport, Sept. 23-25, 1914

(Concluded from page 1418)

Treatment of the Most Frequent Deformities Following Infantile Paralysis.

DR. W. BARNETT OWEN, Louisville: If a child with paralysis of the peroneal group of muscles—the internal group being normal—is allowed to go without protection or support, the healthy muscles rapidly develop and contract, thus forcing the foot into a varus position, because there is no resistance from the paralyzed muscles. The smaller bones of the ankle and foot develop in an abnormal attitude, thereby markedly changing the osseous relationship. If the limb is properly supported, deformity is prevented from progressing, and even if later it becomes necessary (which it most likely will) to practice tendon transplantation, the bones are normal as to size and relationship. It is then only a question of the proper support being transferred from braces to healthy transplanted muscles, or power restored by whatever other operation may be selected as most suitable. Muscles completely paralyzed from infantile paralysis always remain so. Partially affected muscles, however, can be developed greatly by scientific active motion supervised by one who is thoroughly familiar with the conditions. When the parents are advised to "simply let the child run for a while and develop the paralyzed muscles," it means that those completely paralyzed are not benefited, and those partially affected may be overtaxed, thereby losing much strength which could be retained and developed.

Diagnosis of Paralysis in Childhood

DR. JOHN J. MOREN, Louisville: In recognizing paralysis from infrequent lesions like tumor, hydrocephalus and cerebellar lesions, the symptoms are not always characteristic; they are slow in developing and in many instances one is never satisfied with one's opinion. Some of these conditions remain quiescent or only manifested by occasional epileptic seizures or slight mental deficiency and ultimately present a picture which is cerebral in origin, but one will be unable to classify it as any particular disease. As for the value of localizing cerebral symptoms, my experience has been unfortunate and leads me to the conclusion that none is reliable, and even when one groups them together they are often misleading. I have had children referred to me for nervousness and weak eyes, and from lack of symptoms treat them for such, when really they are suffering from a beginning brain tumor or hydrocephalus.

DISCUSSION ON PAPERS OF DRS. OWEN AND MOREN

DR. CURRAN POPE, Louisville: These cases should be turned over to us not for diagnosis but for study. A man cannot in an hour go over a case and make a diagnosis.

DR. MILTON BOARD, Louisville: I wish to emphasize the importance of long and continued study of all cases involving the central nervous system or the cord.

DR. PHILLIP BARBOUR, Louisville: I have been called in consultation to see children in whom a diagnosis of paralysis had been made, when there was no real paralysis. There was inability to move on account of pain, seemingly. It is not easy to say whether the child can not or does not move because it hurts him. I saw recently a case of pseudo-paralysis in which there was inability of the child to move its legs from the pain of ascariis. This child was fed on pasteurized milk and the physician in charge denied the child used pasteurized milk. Following the history we traced it to pasteurized milk first which was the cause of the scurvy condition, and it was rickets which was the cause of so much pain to the child.

DR. A. C. L. PERCEFULL, Louisville: More stress should be laid on the prevention of these deformities rather than the correction of them. The general practitioner allows these patients to run around, neglects them because they can get around fairly well, and are apparently in good health after the acute stage of the infantile paralysis has been passed. If we will send these children to the orthopedist early we

Tumor Formation in Plant and Animal Life; Its Relation to Frequency of Cancer in Man

DR. A. DAVID WILLMOTH, Louisville: All malignant growths possess the following history before operation: (1) The time during which the presence of the growth does not attract the attention of the host. (2) The time consumed by patient in waiting before seeking medical advice. (3) The time consumed by the physician in making a diagnosis. Nothing can be done to shorten the first stage, except education of the public so that regular and frequent examinations can be made and cancers detected early. To shorten the second stage, the public must be educated to the fact that all tumors are curable, that the possibilities and probabilities of a cure are in direct proportion to the promptness and manner of treatment. Everyone must know the potential dangers of delay, that a wart on the lip may and does often take on malignancy in a short time. When a woman subjects herself to an immediate operation on discovery of a tumor in her breast, her chances of cure are 85 per cent., with a possible 100 per cent. After the growth has developed to a point at which diagnosis is easy, her best chances of a cure are only 64 per cent. in the adenocarcinoma, and if the growth is a more malignant form, only 33 per cent. To shorten the third stage, the surgeon must fit himself for the task. The remedy lies in every surgical clinic giving daily instructions in diagnosis, teaching living pathology. It must have a pathologic laboratory in which every case is determined positively, no guessing to be made. In Kentucky with a health board active, sending out bulletins regularly to thousands, let them devote a liberal share of space to the cancer problem. Let each physician become a missionary among his own people. Ask the pulpit for an hour four times a year devoted to public health work. Illustrate your talks, if possible, by lantern slides. Get the various women's clubs to take the matter up and help to make a world-wide crusade.

Obscure Rheumatism in Childhood

DR. S. P. GARRISON, Bellevue: The physician, when dealing with cases of chorea, should always be on the lookout for other symptoms of rheumatism. The rheumatic toxin seems to exert its influence on the unstable nervous system of the child rather early. One of the first symptoms may be simply an unusual irritability of the child; then it becomes nervous, easily frightened, jerking and starting in its sleep, and if not treated, contraction of the voluntary muscles occurs, and other symptoms of chorea or rheumatism soon follow.

Use of Autogenous Vaccines

DR. JOHN D. ALLEN, Louisville: The field in which the most satisfactory results are obtained is the genito-urinary tract. Out of forty-eight cases of acute and chronic pyelitis and cystitis, forty-one made complete recoveries. Thirty-five of these infections were due to the colon bacillus, two to the *Bacillus pyocyaneus*. The others were mixed infections, due to the colon bacillus and *Staphylococcus aureus*, and in addition two of the cases of cystitis showed the gonococcus. Those cases which showed no improvement later proved to be mechanical conditions with secondary infections. Seventy-five cases of chronic gonorrhea which showed the gonococcus, the *Staphylococcus albus* and a diphtheroid bacillus showed improvement and the majority made a complete recovery. Fifteen cases of gonorrhea, which showed only the *Staphylococcus albus* and a diphtheroid bacillus, recovered nicely. The improvement in this type of cases is usually slow. An interesting case was referred for blood examination with instructions to look especially for malarial parasites. The patient gave the following history: Age, 43; was having what he termed, "dumb chills," headaches, nervous, aching in his joints and muscles, generally indisposed, with slight temperature at times. These symptoms had continued intermittently for a period of over two years and he had been treated by several different physicians for malaria. The blood examination showed no parasites, but a leukocytosis of 13,500. Further examination revealed an infected prostate from which a streptococcus was isolated. A vaccine was prepared, and after six doses, all of his symptoms dis-

appeared. The most spectacular results which I have seen from the use of autogenous vaccines have been in tuberculosis of the genito-urinary tract, with mixed infections. The bacteria isolated were the colon bacillus, streptococcus and *bacillus pyocyaneus*. Out of seven cases treated, six showed a tuberculous infection of both kidneys, bladder and testicles. One showed infection of kidneys only. The improvement in all was immediate.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago October, VIII, No. 4, pp. 257-320

- 1 Blood-Pressure in Normal Children. C. F. Judson, Philadelphia, and P. Nicholson, Ardmore, Pa.
- 2 Blood-Pressure in Anemia in Infancy. J. L. Morse and E. T. Wyman, Boston.
- 3 *Voice Sign in Chorea. W. B. Swift, Boston.
- 4 *Diagnosis and Treatment of "Late" Hereditary Syphilis. B. S. Veeder and P. C. Jeans, St. Louis.
- 5 *One Hundred and Forty-One Cases of Recurrent Vomiting. C. G. Kerley, New York.
- 6 Myatonia Congenita of Oppenheim. A. Strauch, Chicago.
- 7 Refractory or So-Called "Fast" Cases of Meningococcus Meningitis. H. Heimann, New York.

3. Voice Sign in Chorea.—The following conclusions are drawn by Swift from a study of twenty cases: 1. These choreic voice changes are more frequent in the vowels, less so in whisper, whistle, consonants, air blow and holding of breath; and are less and less in frequency in this order. 2. There is sufficient uniformity and frequency in the appearance of vocal changes to warrant us in classifying changes of pitch and intensity as one of the signs of chorea; of equal dignity with the choreic knee-jerk of Shaw, the respiratory signs of Graves and other minor symptoms. 3. Other less frequent and less marked changes occur that seem of interest subordinate to those in the vowels. 4. The most marked change occurred in the open prolonged sound of "a" as in "are," and Swift therefore offers this as the routine clinical test and method for the elicitation of the voice sign in chorea.

4. Diagnosis and Treatment of Hereditary Syphilis.—Veeder and Jeans found the incidence of manifest hereditary lues of the "late" type much greater in proportion to the incidence of "early" syphilis than previous figures would indicate. The largest group of cases (43 per cent.) exhibited lesions of the central nervous system, but the authors call attention to a group of cases with lesions associated as "rheumatic"—chorea, acute arthritis, torticollis, myalgia. By Wassermann reactions and the "therapeutic test" they have found that such lesions are not infrequently due to an hereditary syphilitic infection.

It has been their experience that acutely developing lesions respond promptly to intravenous injections of neosalvarsan, but that in order to obtain any permanent results and prevent the recurrence of symptoms an intensive and long continued mercurial treatment must be given in addition. The syphilitic infection—as measured by the Wassermann reaction—is most persistent, and although an intensive and uninterrupted antisyphilitic treatment has been given for nearly two years Veeder and Jeans have not been able to obtain a negative Wassermann reaction in some of their cases. Moreover, the Wassermann reaction has usually returned when treatment has been interrupted in those cases in which it has become negative as the result of treatment. They do not feel that it has been demonstrated as yet that an hereditary syphilitic infection of the "late" type can be eradicated.

5. Cases of Recurrent Vomiting.—Recurrent vomiting, in a vast majority of the cases, Kerley found occurs in the offspring of those who for two or more generations have not been occupied with manual work. The recurrent vomiting patients are the offspring of those who have had business or

professional occupations. Management during the interval. Diet: If the case is a pronounced one, the patient is given a diet with few restrictions, except that cow's milk, butter, cream and sugar are omitted.

Medication: The further treatment consists in the internal use of salicylate of soda, bicarbonate of soda, independent or in combination as advocated by Rachford. In a pronounced case Kerley gives 5 grains of sodium salicylate with 10 grains of sodium bicarbonate three times daily at five-day intervals, or 20 to 30 grains of the sodium bicarbonate daily for a month or two at first. This drug treatment is carried on with rest periods for months and years as the case may require.

Bodily Exercise: A very important factor in the management is in arranging daily physical exercise, such as riding horseback or the bicycle and walking so many street blocks a day. A warm bath and a brisk rub are given at night, and last but not the least important feature in the treatment is the use of physical therapeutics. In severe cases Kerley uses, if possible, daily massage together with various body manipulations and exercises, the latter sufficient to make the child perspire, but not to the point of exhaustion.

A daily evacuation of the bowels is insured by suitable measures. Some children are taken out of school. For others Kerley advises a modified rest-cure. Management during the acute vomiting attack. In the vast majority of the cases, a weak solution of sodium bicarbonate is best retained in the strength of 5 grains of the bicarbonate to 8 ounces hot water. This is given freely.

As laxatives the magnesia preparations are best retained and are used when a laxative is required. Calomel or mercury with chalk will often increase the vomiting. In other cases their use supplies very material assistance. When the vomiting has continued for twenty-four to thirty-six hours the patient is given colonic flushings with sodium bicarbonate, 2 drams to 8 ounces of water at eight-hour intervals. The solution is best retained if it is given warm (105 F.), the tube inserted from 8 to 12 inches.

Feeding: Nothing is gained by attempts at forcing the feeding. When the child is ready for food, he is given barley or rice gruel with dried bread crusts or unsweetened zweiback.

Judging from the results obtained through the withdrawal of highly energized foods and in the use of active and passive exercises it would seem that the chief error in most cases rests in a defective oxidation, or in the giving of food substances of high carbon content in excess beyond the powers of normal oxidation.

American Journal of Physiology, Baltimore

September, XXXV, No. 2, pp. 151-264

- 8 *Effect of Vagus Stimulation on Blood-Flow Through Kidney after Section of Corresponding Splanchnic Nerve. R. G. Pearce, Cleveland.
- 9 Reversibility of Geotropism of Arenicola Larvae by Salts. S. Kanda, Woods Hole, Mass.
- 10 *Functional Variations in Contractions of Different Parts of Small Intestine. W. C. Alvarez, Boston.
- 11 *Influence of Pituitrin on Respiration. L. B. Nice, J. L. Rock and R. O. Courtright, Norman, Okla.
- 12 Influence of Temperature on Rate of Heart Beat in Amblystoma Embryos. H. Laurens, New Haven, Conn.
- 13 *Body Temperature and Pulse-Rate in Man after Muscular Exercise. E. G. Martin, C. M. Gruber and T. H. Lanman, Boston.
- 14 *Effect of Roentgen Rays on Action of Certain Enzymes. A. Richards, Galveston, Tex.
- 15 *Toxicity of Sodium Tartrate. W. Salant and C. S. Smith, Washington, D. C.

8. Blood-Flow in Kidney.—Since it was thought possible that the increase in urine formation found by Asher and R. G. Pearce to follow stimulation of the vagus nerve after section of the splanchnic nerve might be due to an increased rate of blood-flow through the renal vessels, the present investigation was undertaken by Pearce. It is shown by experiments on dogs under the same conditions as those present in the experiments referred to, that no vasodilatation occurs. These observations were made partly by oncometric measurements, and partly by actual measurements of the blood from the renal vein.

10. Variations in Contractions of Small Intestine.—Segments of the rabbit's small intestine, beating in warm oxygenated Ringer's solution were seen by Alvarez to have about 50 per cent. more rapid rhythm when taken from the duodenum than when taken from the lower ileum. Roughly expressed, the rate varies inversely as the distance from the pylorus. These differences in rate observed in isolated segments have been found true also of the two ends of the small intestine as seen in an animal opened under warm salt solution. The oral end of an intestinal loop beats with more regular rhythm and amplitude than the aboral end. The upper end of a loop, or a segment from the upper intestine, is less affected by epinephrin and recovers more rapidly from the inhibitory influence than a lower region. The amplitude of contraction of segments with approximately the same length is greater with segments from the ileum than with those from the duodenum. The rhythm of a segment of the terminal ileum seems to be determined by the rapid rhythm of the sacculus rotundus, for when the two are separated, the segment from the ileum beats at a slower rate. The more rapid rhythm and the smaller amplitude of duodenal segments are apparently associated with a greater tone of this region compared with the lower ileum. The duodenal region is more irritable to mechanic and thermal stimulation than lower parts of the small intestine. It is suggested that the greater tone and irritability and the faster rhythm of the upper part of the small intestine are associated with more rapid peristalsis in this region.

11. Influence of Pituitrin on Respiration.—The characteristic effect of pituitary extract on respiration, according to the authors, is an increase in the depth, followed by a shallowness and a decrease in the rate. In some cases, however, the increase in the depth of respiration is followed by shallowness and an increase in the rate. The effect of pituitrin on the respiratory mechanism occurs synchronously with that on the circulatory system. The effect, however, on respiration passes off sooner than that on circulation. After a few injections of pituitrin, the respiratory mechanism becomes immune and the characteristic responses are not elicited.

13. Temperature and Pulse in Man After Exercise.—Careful comparisons made by the authors of axillary temperature and pulse-rate after muscular exercise in trained and untrained men fail to show the degree of parallelism to be expected, if Mansfeld is correct in his view that the persistent cardio-acceleration following exercise is the result of heightened blood-temperature. The conclusion is drawn that some other explanation must be sought for the phenomenon.

14. Action of Roentgen Rays on Enzymes.—The experiments described by Richards demonstrate that, at least for the digestion of egg-albumin by pepsin and of starch by diastase, a short radiation with Roentgen rays has the effect of accelerating the enzymotic activity, while a longer radiation inhibits it. Between these two strengths lies a point at which the radiation is non-effective. Although the accelerative or inhibitive effects may, perhaps, be slight, they are, nevertheless, definite.

15. Toxicity of Sodium Tartrate.—Salant and Smith claim that sodium tartrate may produce acute and subacute intoxication. In frogs, acute intoxication was observed in most cases. In the domestic fowl, sodium tartrate produced acute effects only: (a) Acute effects in rabbits were produced when sodium tartrate was given by mouth or when it was injected intravenously. (b) Subacute intoxication was produced by intravenous and by subcutaneous injections, much smaller doses being required. (c) Symptoms of injury to the kidney alone was produced with small doses. (d) With larger doses renal injury was more marked and symptoms of muscular and nervous symptoms were present. Renal injury and symptoms of muscular and nervous disturbances were observed in the cat. Carrot-fed rabbits were much more resistant than those which were fed oats and cabbage. Young rabbits on a carrot diet are more resistant than those fed on a milk diet. Resistance seems to decrease with age. The toxicity of dextro and levo tartrates was found to be the same.

Bulletin of Johns Hopkins Hospital, Baltimore

October, XXV, No. 284, pp. 287-322

- 16 *Experimental Observations on Adrenals with Reference to Functions of Their Interrenal Portions. S. J. Crowe and G. B. Wislocki, Baltimore.
- 17 Primary Carcinoma of Fallopian Tube. C. W. Vest, Baltimore.
- 18 *Normal Differential Leukocyte Count. S. R. Miller, Baltimore.

16. Adrenals with Functions of Their Interrenal Portions.—Crowe and Wislocki sum up their extensive as well as intensive experimental work as follows: In the dog the adrenals are vital organs, and it is probably the cortex rather than the medullary portion which is essential to life. After a partial extirpation of the adrenal, the remaining portion undergoes hypertrophic changes. The increase in size is due to a multiplication and enlargement of the cells of the cortex, chiefly in the fascicular zone; the medulla shows no hypertrophic changes, either grossly or microscopically. A chronic infection in an animal with an adrenal insufficiency is occasionally associated with an interstitial fibrosis and destruction of the cells of the fascicular zone of the cortex. An acute general infection in an animal with an adrenal insufficiency produces in some instances focal areas of complete cell destruction (without hemorrhage) in the fascicular zone of the cortex of the remaining portion of the adrenal. In no instance have the authors seen hemorrhages or injury to the cells of the medulla of the adrenal resulting from an acute or chronic infection in the dog.

After an "almost total" removal of both adrenals, the animals often have general convulsive seizures, a subnormal temperature and other symptoms of an acute adrenal insufficiency; in some instances, recovery gradually ensues after such symptoms and the animal subsequently develops in a normal manner as regards growth and sexual functions. There is also no change in disposition. They increase in weight, but not to an abnormal extent. No polyuria has been found.

There is no permanent raising or lowering of the carbohydrate tolerance resulting from an adrenal insufficiency. A transient glycosuria follows the operative manipulation of either the right or the left adrenal. An autoplasmic transplantation of a fragment of adrenal may "take," but is of no functional value. When a fragment of adrenal containing both cortex and medulla is transplanted, the cortical cells may survive, but the medullary cells are absorbed. There seems to be a definite relationship between the adrenals and the lymphatic system. The most striking feature at autopsy on an animal with a long-standing adrenal insufficiency is the enlargement of the mesenteric and retroperitoneal lymph-glands and the solitary lymph follicles in the walls of the intestine. Not infrequently there is also a hyperplasia of the thymus. Further observations are being made by the authors to confirm these findings.

18. Normal Differential Leukocyte Count.—The total leukocyte count and differential formula in normal individuals Miller found are subject to relatively wide variations, which must be considered in the interpretation of studies made on the bloods of individuals presumably suffering from abnormal conditions. He says that the interpretation of any differential count should be based on: (a) A knowledge of that particular individual's normal blood-picture, when possible. (b) The average values for the locality in which that individual resides. (c) A consideration of those factors peculiar to the individual which might modify that particular blood. Differential leukocyte counts should always be reported in terms both of percentage and absolute numbers per cubic millimeter, and in all cases, in which possibly more than one differential count should be made, especially in borderline cases in which slight changes are to be regarded as of diagnostic or prognostic value. The tendency to ascribe a diagnostic value to lymphocytosis Miller thinks is probably overdone. Only when the mononuclear elements constantly exceed the average percentage, absolute values and upper limits of variation (35 to 40 per cent.) for the community and when all modifying factors are considered, should one attempt to draw valuable conclusions from the figures obtained.

Journal of Infectious Diseases, Chicago

September, XV, No. 2, pp. 245-416

- 19 *Tuberculocidal Action of Certain Chemical Disinfectants. L. M. DeWitt and H. Sherman, Chicago.
- 20 Standardization of Antihog-Cholera Serum. T. P. Haslam and O. M. Franklin, Manhattan, Kan.
- 21 Biometrical Study of Mucosus Capsulatus Group. J. G. Fitzgerald, Toronto.
- 22 *Formation of Antibodies in Rats Fed on Pure Vegetable Proteins (Osborne-Mendel Stunting Food). L. Hektoen, Chicago.
- 23 *Bacteriology of Vaginitis. W. B. Sharp, Chicago.
- 24 Relative Longevity of Different Streptococci and Possible Errors in Isolation and Differentiation of Streptococci. W. L. Holman, Pittsburgh.
- 25 *Growth of Gonococcus and Staphylococcus Albus from Urethra in Plate Culture. E. G. Crabtree, Boston.
- 26 Structural Transformations of Blood-Cells of Vertebrates. G. L. Kite, Philadelphia.
- 27 *Infection of Man with Bacterium Tularensis. W. B. Wherry and B. H. Lamb, Cincinnati.
- 28 Etiology of Dengue. Attempt to Produce Disease in Rhesus Monkey by Inoculation of Defibrinated Blood. C. H. Lavinder and E. Francis, Washington, D. C.
- 29 Bacillus Abortus Equinus as an Etiologic Factor in Infectious Arthritis of Colts. E. S. Good and W. V. Smith, Lexington, Ky.
- 30 Anaerobic Vibrio Isolated from Case of Acute Bronchitis. R. Tunnicliff, Chicago.
- 31 Pleomorphic Branching Organism Isolated from Case of Chronic Rhinitis. R. Tunnicliff, Chicago.
- 32 Esterase Activity of Plain and Dextrose Broth Cultures of Typhoid Bacillus. A. I. Kendall and J. P. Simonds, Chicago.
- 33 *Bacteriologic and Chemical Evidence of Occurrence of Hexose Sugar in Normal Milk. H. M. Jones, Chicago.
- 34 *Treatment of Tetanus by Antitetanic Serum. E. E. Irons, Chicago.
- 35 *Growth and Viability of Streptococci of Bovine and Human Origin in Milk and Milk Products. D. J. Davis, Chicago.
- 36 *Renal Changes in Rabbits Inoculated with Streptococci. E. R. LeCount and L. Jackson, Chicago.
- 37 Etiology of Pyemic Arthritis in Foals. F. W. Schofield, Toronto.

19. Tuberculocidal Action of Disinfectants.—DeWitt and Sherman found that phenol in 5 per cent. water solution kills human tubercle bacilli in five minutes, one hour, six hours and twenty-four hours. It is nearly as efficient in 1 per cent. solution and shows some tuberculocidal action down to 0.1 per cent. solution. Formaldehyd in 1 per cent. solution kills all tubercle bacilli in one hour (shorter time not tested). In 0.01 per cent. solution it kills in twenty-four hours, so no disease develops in guinea-pigs. Formaldehyd, therefore, is somewhat more efficient than phenol. Ethyl alcohol in 25 per cent. solution kills all tubercle bacilli within one hour (shorter time not tried). Acetone, chloroform and ether have very little if any, tuberculocidal influence. Toluene and iodine show slight influence. Of the metallic salts used, mercuric chlorid shows the greatest tuberculocidal action, 0.001 per cent. killing in twenty-four hours, and 0.1 per cent. in one hour. Gold chlorid in 0.005 per cent. solution kills in twenty-four hours, while 0.025 per cent. silver nitrate kills in the same time. One-tenth per cent. gold tricyanid and 5 per cent. copper chlorid kill the organisms in twenty-four hours.

From a comparison of the results of the experiments contained in this paper with those of disinfection work on other more rapidly growing organisms, the *Bacillus tuberculosis* appears less resistant than the streptococcus, staphylococcus, pneumococcus or gonococcus, or than the *Bacillus typhosus*, coli or anthracis spores, to phenol, formaldehyd, HgCl₂, AgNO₃ and AuCl₃, but more resistant than these other organisms to alcohol, chloroform, ether, acetone, toluene and Lugol's solution. The fat content of the tubercle bacillus does not determine its resistance to disinfectants. These experiments seem to show that if the comparatively high content of this organism differentiates its behavior from that of bacteria of low fat content, it does so by rendering to tubercle bacillus more resistant to fat solvents, and less resistance and to substances insoluble in fats.

22. Antibodies in Rats on Osborne-Mendel Food.—In order to learn the effects of the Osborne-Mendel food on antibody production two sets of experiments were carried out by Hektoen, each involving a group of stunted and of normal rats. Similar results were obtained in each case. The stunted rats were placed on the special food five days before the injection of the sheep blood. The materials for the food were supplied by Professor Mendel and the food was pre-

pared according to his directions as follows: take 380 gm. corn gluten (specially prepared), 280 gm. "protein-free milk," 20 gm. Duryea's corn starch, 320 gm. lard; melt the lard at a low temperature and stir into it the other ingredients previously mixed; cool after thoroughly mixing, and put through an absolutely clean meat chopper several times. The paste keeps well in glass jars. The rats were kept supplied constantly with all they would eat, care being taken to pack the food well in suitable cups. The cages were kept clean and fresh water supplied regularly. This food arrested growth. The control animals were fed as usual.

In order to reduce the chances of accidental death the first bleeding was made on the fourth day after the injection of the antigen (1 c.c. of a 10 per cent. suspension of sheep blood per kilo of weight intraperitoneally), then every third day two times, and after that at longer intervals. The determinations of the lysin were made by finding the highest dilution of the serum, heated at 56 C. for thirty minutes, and complemented with guinea-pig serum (0.0125 c.c.), at which, distinct lysis was produced. The total quantity in each tube was 0.6 c.c., including 0.2 c.c. of a 5 per cent. suspension of sheep corpuscles, carefully washed, 0.0125 c.c. of guinea-pig serum, and the requisite amount of heated rat-serum, the rest being salt solution. The mixtures were incubated for two hours and then placed in the ice-box until the following morning.

The curves run fairly parallel; there is no outstanding difference in the results in the stunted and the normal rats, and there is just as much variation between the individual members of one group as of the other. That there should be variation is not surprising especially in view of the probable influence of the bleedings, to which attention has been called. It appears then that, so far as the results of these experiments indicate, the arrest of growth in rats by the Osborne-Mendel method does not cause any disturbances in the production of antibodies.

23. Bacteriology of Vaginitis.—From his analysis Sharp concludes that vaginitis is largely (and may be entirely) gonococcal in origin, and that the gonococcus is present as long as the discharge continues. If there is a secondary invader it either cannot easily be cultivated aerobically, or it is a normal inhabitant of the vagina, and it does not altogether replace the gonococcus. The immunity to the gonococcus seemed to diminish after a few months, after which the infection frequently persisted. This immunity could be followed by complement-fixation or cutaneous tests. Sharp found the latter more delicate as it gave a suggestive reaction when the immunity was too weak for complement-fixation. The cases giving a definitely positive test with one did with the other also. Definite diagnosis from smears seemed of value only in the few cases when carefully examined Gram preparations showed the typical gonococcal picture, while a majority of slides could not be called positive unless confirmed by other signs. While laboratory methods are of assistance in determining the nature of the infecting organism, Sharp states, that none of them seems to be of value in defining the time of its elimination.

25. Growth of Gonococcus and Staphylococcus.—Crabtree claims that the evidence presented by Warden that gonorrheal urethritis is due to the *Staphylococcus albus* is based on erroneous interpretations of his observations and is fallacious. Gram-negative diplococcal staphylococci may be produced in the laboratory, and it is conceivable that they also occur in the urethra, but Gram-negativeness is due to mechanical interference of albumin with the Gram stain. The *Staphylococcus albus* has no stage of growth in which it is a Gram-negative organism. The appearance is due to an artefact.

27. Infection with Bacterium Tularensis.—A case of ulcerative conjunctivitis and lymphadenitis in man is shown by Wherry and Lamb to be caused by a minute, capsulated bacterium in all probability identical with *B. tularensis*, which was first discovered by McCoy and Chapin in a plague-like disease of the California ground-squirrel. Without the employment of very special methods of staining and cultivation, the virus, although it was known not to pass the Berke-

feld filter No. 5, remained invisible. The authors recommend anilin-water-Hoffman's violet particularly for its demonstration, and in addition to the coagulated hen's egg-yolk recommended by McCoy and Chapin for its cultivation, they found that hen's ovomucoid with a trace of yolk is also a favorable medium. Their findings would seem to indicate that this disease is wide-spread among rodents. Further, they call attention to the fact that this recently discovered disease of rodents is apparently sufficiently virulent for gray mice to warrant the presumption that it may some day take its place along with *B. pestis* as a menace to man.

33. Hexose Sugar in Milk.—Bacteriologic and chemical evidence is presented by Jones which indicates that milk normally contains a substance which reacts like dextrose.

34. Treatment of Tetanus.—An analysis of 225 cases is made by Irons. From these statistics it appears that the mortality of tetanus treated by tetanus antitoxin is about 20 per cent. lower than the average mortality of tetanus treated without serum. Twenty patients of whom 11 were acute, 5 chronic and 4 unknown incubation, received intravenous injections of serum either alone or in combination with other methods of injection. The collective mortality of these was 65 per cent. Of those who died, however, treatment was begun within eight hours in 1, within twenty-four hours in 5, on the third day in 2 and on the fourth day of symptoms, or later, in 3. In 2 the duration of symptoms before treatment was not noted. Of 37 patients who received antitetanic serum intraspinally either alone or in combination with other methods of injection, 16 were acute, 17 chronic and in 4 the incubation period was unknown. The collective mortality was 56.7 per cent. Of those who died 5 received antitoxin within twenty-four hours after the appearance of symptoms, 5 received first treatment on the second day of symptoms, 4 on the third day, 2 on the fifth day or later, and in 3 the duration of symptoms before treatment was not noted.

Irons believes that the delay of treatment until the second or third day of symptoms, and the small doses (1,500 to 3,000 units) which a number of these patients received, go far toward explaining the failure of these methods to reduce the death-rate in this series below 50 per cent. The unfortunate fact that often patients do not apply for treatment until the second or even the third day of symptoms can not be used as an argument against a method of treatment which offers a reasonable hope of success if instituted early in the disease. Magnesium sulphate was given intraspinally in eighteen cases which also received serum. Four cases, two acute and two chronic, recovered giving a mortality for the group of 77 per cent. In two cases death occurred shortly after the injection, with symptoms of respiratory paralysis.

Irons emphasizes that it is important that the full effect of the antitoxin should be obtained immediately and this may be accomplished by giving 3,000 to 5,000 units intraspinally and 10,000 to 20,000 units intravenously at the earliest possible moment after symptoms of tetanus appear. On the following day the intraspinal injection may be repeated. The blood remains strongly antitoxic for several days. On the fourth or fifth day 10,000 units should be given subcutaneously to maintain the antitoxin content of the blood. If only a small amount of antitoxin (3,000 to 5,000 units) is available it should be given intraspinally. Intraspinally and intravenous injections should be given with all the precautions usually employed for these methods.

This use of antitoxin in no respect replaces other necessary recognized non-specific methods of treatment in tetanus. Surgical treatment of the site of infection should be instituted at once. The patient should be placed at rest in bed in a quiet, darkened room, and should receive sufficient sedatives to control convulsions, together with adequate supply of fluid nourishment, and attention to the elimination by kidney and bowel. The necessity for large and continued doses of sedatives such as chloral or chlorbutanol should not blind the physician to the possible danger of giving an overdose. The condition of the patient should be carefully watched, and a revision of the standing orders for sedatives made whenever symptoms suggest the decrease or increase of dose.

35. Growth of Streptococci in Milk.—Davis found that in the process of milk-souring the growth of hemolytic streptococci is inhibited and the organisms are gradually destroyed. They are killed in three hours or less by the acidity of sour milk (forty-eight hours after curdling) and of buttermilk. In ordinary butter they die in the course of a few days, due to the acidity, although in neutral butter they live for a long time. In ice-cream, hemolytic streptococci remain alive for at least eighteen days without any appreciable diminution in number or virulence. Ice-cream would seem to be, therefore, a most suitable medium for the transmission and preservation of dangerous streptococci. Separator-cream contains more streptococci than the whole milk, skim-milk considerably less, while the sediment contains a large number. Hemolytic streptococci do not multiply to any extent at 20 C. or below in milk; at 26 C. there is little or no multiplication during the first six hours in sterile or commercial milk, but at the end of twenty hours there is considerable increase in the sterile milk. In the commercial milk their growth is inhibited by the growth of other bacteria; this holds also for higher temperatures. It seems that under no conditions met with in the ordinary handling of milk can there occur any appreciable multiplication of hemolytic streptococci. Inasmuch as under the most favorable temperature, multiplication of hemolytic streptococci in milk does not occur inside of one to two hours, it is impossible for any appreciable increase to occur during the short interval between the raising and lowering of the temperature of milk in the process of pasteurization.

36. Renal Changes in Rabbits Inoculated with Streptococci.—Among the results mentioned by LeCount and Jackson are the demonstration of fewer changes in the kidneys of rabbits treated with antistreptococcus serum or vaccine than in those of untreated animals, and the presence of changes characteristic of chronic nephritis in a large number of animals inoculated with streptococci. The most important result, however, is the experimental production of alterations essentially subacute and quite like the acute interstitial nephritis in human kidneys caused by the acute infectious diseases complicated by or due to streptococcus infection. Then, too, the authors wish to emphasize the great need of thorough study of the kidneys of control animals in any investigation of experimental nephritis.

Journal-Lancet, Minneapolis

October 1, XXXIV, No. 19, pp. 501-524

- 33 1. Periosteal Round-Celled Sarcoma of Femur; 2. Cretinism; 3. Rupture of Symphysis Pubis During Labor. G. M. Williamson, Grand Forks, N. D.
- 59 Diagnosis and Treatment of Afebrile Convulsions in Infancy and Early Childhood. F. W. Schlutz, Minneapolis.
- 40 Routine Technic of Test-Meal and Bismuth Roentgenography. H. S. Willson, Minneapolis.
- 41 Psychic Shock Following Operations. J. E. Engstad, Minneapolis.

Journal of Medical Research, Boston

September, XXXI, No. 1, pp. 1-176

- 42 Studies on Cerebrospinal Fluid. H. Cushing, Boston.
- 43 Id. Theories of Drainage of Cerebrospinal Fluid with an Analysis of Methods of Investigation. L. H. Weed, Boston.
- 44 Id. Pathways of Escape from Subarachnoid Spaces with Particular Reference to Arachnoid Villi. L. H. Weed, Boston.
- 45 *Id. Dual Source of Cerebrospinal Fluid. L. H. Weed, Boston.
- 46 *Id. Drainage of Intra-Ocular Fluids. P. Wegefardh, Boston.
- 47 *Id. Establishment of Drainage of Intra-Ocular and Intracranial Fluids into Venous System. P. Wegefardh, Boston.
- 48 Id. Analogous Processes of Cerebral and Ocular Fluids. P. Wegefardh and L. H. Weed, Boston.

45. Dual Source of Cerebrospinal Fluid.—This lengthy and detailed study is briefly summarized by Weed as follows: Cerebrospinal fluid appears to be derived from two sources: (a) the choroid plexuses in the cerebral ventricles; (b) the perivascular systems of the nervous tissues. No evidence is afforded by these observations of any absorption of cerebrospinal fluid into the cerebral capillaries. Under certain pressure conditions an extensive injection of the perivascular system from the subarachnoid spaces can be secured by the ferrocyanid method.

46. Drainage of Intra-Ocular Fluids.—As a result of his studies Wegefardh holds that in the process of elimination

of the aqueous fluid at the so-called filtration angle, the fluid gains access to the scleral sinuses in the lower animals (cat, dog, rabbit) by passage through "pectinate villi," which are analogous in structure and function to the arachnoid villi of the cerebral meninges. The process in man is the same as in lower animals, but the pectinate ligament tufts extend in an unbroken chain around the periphery of the anterior chamber. The large neurones of the retina possess pericellular spaces which communicate with the aqueous reservoir, and that by means of these communications the waste products of the cells appear to be in all likelihood eliminated. The rabbit and probably in other animals as well, the ocular and cranial fluids come into direct contact around the central vessels and in the tissue of the optic nerve. The anterior chamber can be injected from the veins after aqueous decompression. Neither the choroid, ciliary body, or cornea play any part in aqueous absorption, whereas the function of the iris in this respect is still a doubtful problem.

47. Drainage of Intra-Ocular and Intracranial Fluids Into Venous System.—In Wegefardh's experiments a direct communication between the sinuses of the sclera and the fluid reservoirs in the canine eye has existed for at least forty-eight hours without hemorrhage into the ocular cavity. A direct communication between the superior longitudinal sinus and the subarachnoid space of normal dogs has remained patent during observations up to seven days in length, without hemorrhage into the fluid spaces. Sinoventricular punctures in the case of a hydrocephalic kitten were followed by improvement in the animal's general condition. No intracranial bleeding was occasioned by these punctures.

Journal of Outdoor Life, New York

October, XI, No. 10, pp. 289-319

- 49 Can I Keep up "Treatment" after I Leave the Sanatorium? E. Washburn, Rutland, Mass.
- 50 Prenatal and Early Childhood Problems in Tuberculosis. W. C. White, Pittsburgh.
- 51 Children's Garden at Tuberculosis Day-Camp. "Westfield." R. Weiss.
- 52 New Health. E. T. Devine, New York.

Lancet-Clinic, Cincinnati

October 3, CXII, No. 14, pp. 361-384

- 53 Diagnostic Value of Sphygmomanometer in Examinations for Life Insurance. J. W. Fisher, Milwaukee, Wis.
- 54 Prognosis of Cardiac Disease, with Reference to Life Insurance. R. H. Babcock, Chicago.
- 55 Chronic Discharging Ears and Life Insurance. W. Mithoefer, Cincinnati.

Medical Record, New York

October 10, LXXXVI, No. 15, pp. 615-656

- 56 Relation between Surgical Treatment and Radiotherapy of Cancer. I. Levin, New York.
- 57 Biliary Surgery. J. F. Erdmann, New York.
- 58 Dietetic Treatment of Children During Second Period of Life. C. G. Leo-Wolf, Buffalo.
- 59 Hyperthyroidism. I. W. Ballard, Opelika, Ala.
- 60 Periodicity of Drink Neuroses. T. D. Crothers, Hartford, Conn.
- 61 Health Officer and Tuberculosis Problem in Rural Communities. S. A. Knopf, New York.

Military Surgeon, Chicago

October, XXXV, No. 4, pp. 311-410

- 62 Size of Sanitary Soldier. W. H. Crum, U. S. Army.
- 63 An Efficient Method of Heating Water in Camps of Some Permanency. A. E. Truby, U. S. Army.
- 64 *Treating Gelatin Capsules with Formaldehyd Solution for Ipecac Medication. E. L. DeLanney, U. S. Army.
- 65 Methods of Handling Field Hospital Equipment. R. H. Goldthwaite, U. S. Army.
- 66 Convenient Stake Puller and Stake Driving Cap. W. W. Reno, U. S. Army.
- 67 Postgraduate Study in Vienna and Its Value. M. A. DeLaney, U. S. Army.

64. Gelatin Capsules Treated with Formaldehyd.—To prevent ipecac coming in contact with the stomach DeLanney put it in gelatin capsules previously treated with formaldehyd to render them insoluble in an acid media. Number 00 gelatin capsules were soaked for a few hours in a 20 per cent. solution of formaldehyd and then dried. They became very brittle and somewhat distorted but not enough so to prevent their subsequent filling. They were then filled with 1 gm. of powdered ipecac. This method of giving ipecac proved very satisfactory in a case of amebic dysentery and there was no nausea. The patient improved very rapidly

under the combined treatment and the stools dropped to one a day. The combined method of giving 1 gm. ipecac three times a day and emetin $\frac{1}{3}$ grain twice a day for three days, then increasing $\frac{2}{3}$ grain for six days seemed to act much better than when either the ipecac or the emetin treatment had been given previously, the patient gaining 5 pounds during the treatment and suffering no inconvenience.

Modern Hospital, St. Louis

October, III, No. 4, pp. 215-282

- 68 Hospital as an Educational Institution. C. H. Mayo, Rochester, Minn.
- 69 St. Luke's Hospital, Jacksonville, Fla. E. F. Stevens, Boston.
- 70 Feeding the Hospital—Food. L. Graves, Cleveland.
- 71 Hospital Cost Accounting. F. C. Townsend, New York.
- 72 New Psychopathic Hospital for Chicago Marks New Era. H. I. Davis, Chicago.
- 73 "Twilight Sleep" from Hospital Viewpoint. W. H. W. Knipe, New York.

New Jersey Medical Society Journal, Orange

October, XI, No. 10, pp. 493-544

- 74 Oration in Medicine. L. F. Barker, Baltimore.
- 75 Radiography of Stomach and Intestines. C. F. Baker, Newark.
- 76 Some of the Histologic Changes Found in Tabes. F. H. Thorne, Morris Plains.
- 77 German Surgery. J. H. Bradshaw, Orange.

New Orleans Medical and Surgical Journal

October, LXVII, No. 4, pp. 311-418

- 78 Some Unsolved and Debatable Problems in Tuberculosis. E. O. Otis, Boston.
- 79 Extensive Case of Osteomyelitis, Involving Two-Thirds of Skull, Originating from Frontal Sinusitis. W. T. Patton, New Orleans.
- 80 Artificial Pneumothorax in Treatment of Lung Abscess. I. I. Lemann and U. Maes, New Orleans.
- 81 Origin of Blood-Cells and Differentiation of Leukocytes. H. W. Wade, New Orleans.
- 82 Differential Leukocyte Count and Its Interpretation. F. M. Johns, New Orleans.
- 83 Total Red and White Cell Counts and Hemoglobin and Color Index Estimation. J. C. Cole, New Orleans.
- 84 Case of Extensive Lupus, Treated with Tubercle Bacilli Emulsion. W. J. Durel, New Orleans.
- 85 Some Problems in Obstetrics. P. Michinard, New Orleans.

84. Case of Extensive Lupus, Treated with Tubercle Bacilli Emulsion.—Taking the neutrophil blood-picture every second day. In a case of skin tuberculosis, with cervical glandular tuberculosis and also taking a differential blood-count, Durel administered tubercle bacilli emulsion according to the changes in the neutrophil index. Starting bacilli emulsion with 0.00,000,000,5 mg.; this was increased, diminished, or stopped altogether, according to the fall or rise in the neutrophil index. During the greater part of the treatment, bacilli emulsion was not given if the neutrophil index was above 96. Bacilli emulsion was repeated when the neutrophil index was at or below 94, and it was never increased if the neutrophil index was not at or below 92.

At the end of four months Durel had reached the dose of 0.00,000,5 mg. of bacilli emulsion, and noticed that the lupus below the left eye showed signs of improvement. Increasing the dose of bacilli emulsion when the neutrophil index was at or below 92, he reached the dose of 0.0005 mg. at the end of the sixth month. Then he noticed that the neutrophil index would remain above 96 for a week or ten days at a time, and would fall only when he would cease the use of the bacilli emulsion. Durel also noticed that when he administered the emulsion with the index above 96, especially when the larger doses of emulsion were given, that this was always followed by marked redness around the ulcers, with an increase in secretions and a swelling of the left eye. On four occasions the temperature rose to 100 F., with headache and pains. At the end of the first year, though the ulcers were improved, Durel realized that the healing of the ulcers had been retarded by the giving of too large and too frequently repeated doses of bacilli emulsion, and these given with a neutrophil index above 96. Then it was that he administered (during the last six months) bacilli emulsion in smaller doses (0.00,000,000,5 to 0.00,000,000,005 mg.), and only when the neutrophil index was below 94 or 92. Never was the dose increased after, if the index was not below 92. This treatment was followed by a progressive healing of the

extensive ulcers, and the enlarged cervical glands disappeared entirely three months before the lupus healed altogether. The higher doses and too frequently repeated doses of emulsion caused too frequent local reactions, the latter proving injurious to the patient.

The observations noted in this case confirm, to Durel's mind, the hypothesis that artificial tubercle bacilli proteins stimulate the bone-marrow cells, etc., producing a leukocytosis, especially that of the neutrophils; that a moderate qualitative and quantitative leukocytosis is beneficial to the healing of the tuberculous foci; that overstimulation, with large doses of any of the tubercle bacilli products, causes an excessive and injurious leukocytosis, proving injurious by flooding the blood-circuit with new, immature leukocytes, deficient in effective antibodies, the latter immature leukocytes overcrowding the lupus or tuberculous foci, preventing the healing of the diseased area. This Durel states shows that direct leukocytic immunity is the prime factor in the healing of all tuberculous foci, and that direct immunization takes place in the cells immediately surrounding the tuberculous foci.

Southern Medical Journal, Mobile

October, VII, No. 10, pp. 771-844

- 86 Medicolegal Relations of Pellagra. J. W. Babcock, Columbia, S. C.
- 87 Bacteriologic Examination of Knoxville Milk. A. L. Smith, Knoxville, Tenn.
- 88 Spasm of Pylorus. Report of Case Followed Through Four Years. G. J. Greil, Montgomery.
- 89 Intestinal Indigestion. C. C. Elebash, Selma.
- 90 Intussusception—Operation—Recovery. F. W. Wilkerson, Montgomery.
- 91 Cerebellar Dysgergia from Malarial Thrombosis. T. A. Williams, Washington, D. C.
- 92 Malarial Pernicious Fever. L. Sexton, New Orleans.
- 93 Clinical Importance of Arterial Hypertension; Treatment. I. W. Ballard, Opelika.
- 94 Blood Letting in Pneumonia. H. Boyd, Scottsboro.
- 95 Pneumonia. F. W. Galloway, Florida.
- 96 Acute Gastric Dilatation. W. Mason, Jr., and N. Evans, Murray, Ky.
- 97 Adrenalin Cocain Surface Anesthesia. R. S. Cauthen, Charlotte, N. C.
- 98 Typhoid Perforation with Abscess Appendix—Operation—Recovery. W. C. Gwin, Birmingham.
- 99 Lithopedion in an Extra-Uterine Pregnancy. J. P. McMurphy and N. E. Sellers, Atmore.
- 100 Relative Value of Radium and Roentgen Ray in Treatment of Skin Diseases and Cancer. C. A. Simpson, Washington, D. C.
- 101 Bone Regeneration. Report of Case. R. B. Slocum, Wilmington, N. C.
- 102 Skin Cancers, J. L. Kirby-Smith, Jacksonville, Fla.
- 103 Cystoscopy: Its Use and Abuse. L. Thompson, Hot Springs, Ark.
- 104 Renal Hematurias as Influenced by Ureteral Catheterization. G. Timberlake, Baltimore.
- 105 Treatment of Specific Leukorrhea. R. Duffy, Tampa, Fla.
- 106 Postgraduate Study in Vienna. N. D. Biting, Durham, N. C.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

September 26, II, No. 2804, pp. 525-564

- 1 Evolution of Toxemic Iritis. W. M. Beaumont.
- 2 Insects and War. A. E. Shipley.
- 3 Irrigation Treatment of Acute Gonorrhea in Male. W. W. Powell.
- 4 *Treatment of Fibromyomata of Uterus. A. Donald.
- 5 *Treatment of Contracted Pelvis in Pregnancy and Labor. H. Jellett.
- 6 *Id. F. Frank.
- 7 Case of Rupture of Uterus Through Scar of an Old Cesarean Section. A. T. Smith.
- 8 Further Experiences with Veratrine in Treatment of Eclampsia. F. W. N. Haultain.
- 9 *Rapid Relief in Acute Lumbago by Manipulation and Active Movement. W. Haig.
- 10 Babinski Sign in Transient Functional Diseases. F. C. Eve.

4. Treatment of Fibromyomata of Uterus.—Donald is opposed to the Roentgen-ray treatment for uterine fibroids. His objections are stated as follows: 1. All who are engaged in gynecologic work know how difficult it sometimes is to be sure that we are dealing with a fibroid and not with some other condition. Mistakes are not uncommon: (a) In cases of pelvic inflammation in which hard masses are found inseparable from the uterus; (b) in cases of solid or tense ovarian tumors, especially if they are adherent to the uterus;

(c) in cases of ovarian and tubal disease associated with uterine fibroids; (d) in sarcomata and adenomyomata of the uterus, in which the diagnosis is only made with certainty after the tumor has been removed; (e) in carcinomata of the uterus associated with a fibroid, or in large cancerous growths in the pelvic cellular tissues; (f) degenerations in fibroid tumors, especially red degeneration and calcareous change.

Donald has analyzed 201 of the cases in which he has operated and finds the following complications were present: Ovarian cyst, 13 cases; red degeneration, 12 cases; suppuration in tube or ovary, 6 cases; appendicitis, 4 cases; calcareous degeneration, 5 cases; fibrocystic tumor of uterus, 2 cases; carcinoma in the fibroid, 2 cases; adenomyoma, 2 cases; necrosed polypus, 1 case; hydroperitoneum, 1 case—that is, he found complications in 44, or in nearly one-fourth of the cases. Sufficient time has not elapsed since the introduction of the Roentgen-ray treatment for fibroids to enable one to state that there will be no further trouble after the hemorrhage has ceased. But judging from what has happened in many cases after the expectant treatment, Donald says, there is every reason to believe that many of the tumors which seem for the present to have been successfully treated by Roentgen rays will cause serious trouble in the future. The later degenerative changes are just as likely, if not more likely, to occur after this treatment as after the expectant treatment. Further, if operation has to be undertaken at a later stage there is reason to believe that it will be more difficult after Roentgen-ray treatment.

The advantages of operative as compared with Roentgen-ray treatment are summed up as follows: 1. The mortality of the operation is now very small—in cases suitable for Roentgen-ray treatment it is under 2 per cent. (3 cases are deducted from the 9 fatal cases as unsuitable for Roentgen-ray treatment—1 case of acute intestinal obstruction, 1 case of infected fibroid and 1 case of large calcareous fibroid in which death occurred from peritonitis). The mortality following Roentgen-ray treatment cannot be estimated for many years. 2. The cases in which operation was most dangerous (cases of profound anemia) a few years ago, may now be undertaken with little risk. 3. The patient after operation is at once and for all relieved of any anxiety concerning the tumor. Donald believes that Roentgen-ray treatment has a place in gynecology in the treatment of cases of chronic metritis associated with profuse hemorrhage at the menopause. But, he says, it should be given up in cases of fibromyomata of the uterus.

5. Treatment of Contracted Pelvis.—As to the treatment of the second degree of pelvic contraction, Jellett says, that pubiotomy is the operation of choice, unless there are special complications present. It is specially indicated in the young multipara, because owing to previous labor, the vaginal canal is dilated and lacerations are unlikely to occur, and because of the effect of the operation on subsequent pregnancies. On the other hand, cesarean section is more suitable in the elderly primipara, because vaginal laceration is more likely to occur, and because it is unnecessary in her to take account of further pregnancies. Premature labor is only indicated under special conditions which render either of the foregoing operations impossible or inadmissible. Craniotomy is only permissible when the child is dead.

6. Id.—In cases with large disproportion Frank advises the classical cesarean section, if one can guarantee asepsis. If the asepsis is doubtful, delivery by the suprasymphyseal route is advocated. In the middle degrees of narrowing the subcutaneous symphysiotomy is to be preferred in multipara. In primipara, with narrow soft parts, the suprasymphyseal delivery is to be preferred if there is suspicion of infection. In clean cases in primipara classical cesarean section is advised. In primipara symphysiotomy is to be considered if there is only slight obstruction to delivery.

9. Relief in Acute Lumbago by Manipulation and Active Movement.—The method of treatment emphasized by Haig consists of (1) deep thumbing of the lumbar muscles, in

process of which a painful area is usually found either in the middle line or to one or other side; (2) fixing the part of the vertebral column below this painful region by firm pressure of the thumb on each side of the spine; and (3) making the patient perform movements of flexion, acute dorsiflexion, lateral flexion and rotation. The result is cure of the attack of lumbago, inasmuch as the patient is able at once to return to his work, and in no case has Haig had to repeat the process.

Dublin Journal of Medical Science

September, III, No. 513, pp. 161-240

- 11 Relation of Theory and Practice in Operative Treatment of Genital Prolapse. H. Jellett.
- 12 Insomnia. T. J. Kelly.
- 13 Treatment of Syphilis by Salvarsan in Dr. Steeven's Hospital, Dublin. H. C. Smyth and G. E. Pepper.
- 14 Clinical Report of Rotunda Hospital from November 1, 1912, to October 31, 1913. H. Jellett, D. G. Madill and R. M. Allan.

Lancet, London

September 26, II, No. 4752, pp. 783-834

- 15 Dysentery. F. M. Sandwith.
- 16 Improvisation of Apparatus in Treatment of Certain Fractures in Modern Warfare. (To be continued.) J. H. Watson.
- 17 Case of Enteric Fever Complicated by Purpuric Symptoms. G. R. Bruce.
- 18 "Composition and Derivatives of Urinary Dextrin. P. J. Cammidge and H. A. H. Howard.
- 19 Case of Extra-Uterine Pregnancy with Prolonged Retention (Two Years) of Fetus. E. M. Farrer.
- 20 Sterilization of Potable Waters by Means of Calcium Hypochlorite. J. C. Thresh.

18. Urinary Dextrin.—The discovery of a process by which the dextrin in urine can be estimated, even in the presence of sugars, if free pentoses have been excluded by preliminary tests, has enabled Cammidge and Howard to investigate the occurrence of this body in diabetes and other pathologic conditions and also to watch the variations that occur in different circumstances. The process, which is described in detail in the paper, is not sufficiently delicate to detect the trace of dextrin present in normal urines and the authors have found that the urine of healthy individuals has no "iodin coefficient" of nought. When carbohydrate metabolism is being imperfectly carried out a high iodin coefficient is obtained. If, however, the interference with carbohydrate metabolism is such that sugar appears in the urines, a previously high iodin coefficient usually falls, to rise again when the sugar disappears.

In many cases of persistent glycosuria, too, this movement of the iodin coefficient and the sugar excretion in opposite directions has been observed, a rise in the one being accompanied or preceded by a fall in the other. In severe cases of diabetes, in which more sugar is being excreted in the urine than would be accounted for by the carbohydrate taken as such in the food, particularly when a fatal termination is close at hand, the course of the iodin coefficient of the urine and the sugar excreted follow each other.

These observations suggest that the urinary dextrin is probably a derivative or antecedent of glycogen intermediate between that substance and dextrose. In the former case the body still possesses the power of breaking down glycogen to a polysaccharid of low molecular weight, but this, instead of being converted into dextrose, which in its turn would give rise to CO_2 and H_2O , suffers irregular oxidation and may give rise to a body having the formula: $(\text{C}_6\text{H}_{10}\text{O}_5)_x - \text{O} - \text{CH}(\text{OH}) - \text{CH} - \text{CH}(\text{OH}) - \text{CH}_2\text{OH}$. On

oxidizing the end CH_2OH group the authors should have a substance with the formula: $(\text{C}_6\text{H}_{10}\text{O}_5)_x - \text{O} - \text{CH} - \text{CH}(\text{OH}) -$

$\text{CH} - \text{CH}(\text{OH}) - \text{CH}(\text{OH}) - \text{CH}(\text{OH})$. By splitting off the terminal CO_2 group a dextrin-like body with the formula: $(\text{C}_6\text{H}_{10}\text{O}_5)_x - \text{O} - \text{CH} - \text{CH}(\text{OH}) - \text{CH} - \text{CH}(\text{OH}) - \text{CH}_2\text{OH}$, would result. This corresponds to one of the alternative formula, $(\text{C}_6\text{H}_{10}\text{O}_5)_n \cdot \text{C}_2\text{H}_4\text{O}_2$, which the authors' analysis of

the urinary dextrin suggests is probable for that body. They suggest that it is also possible that the urinary dextrin may result from an incapacity on the part of the tissues to form glycogen from dextrose, the process stopping short at the intermediate dextrin stage. In support of this view is the fact that in mild and intermittent cases of glycosuria the iodine coefficient of the urine vanishes on a carbohydrate free diet to reappear again when dextrose is added to the food in sufficient amount to bring about a return of the glycosuria, suggesting that when the glycogen stores of the body have been reduced by the exclusion of carbohydrate from the diet the tissues recover to a certain extent their powers of building dextrose into a more complex molecule, but cannot carry all of it beyond the dextrin stage.

The authors found in cases of hepatic disease, in which dextrose can be utilized, but in which levulose and lactose give rise to "alimentary" glycosuria, that the ingestion of dextrose is not associated with an increase in the iodine coefficient of the urine. When, however, either of the other sugars is given in sufficient amount the iodine coefficient rises, suggesting that dextrose can be converted into glycogen, but that part of the levulose and lactose can only be carried to the dextrin stage, some being excreted in an even less completely metabolized condition.

Archiv für klinische Chirurgie, Berlin

September 15, CV, No. 3, pp. 529-788. Last Indexed October 3, p. 1237

- 21 Treatment of Tuberculous Intracapsular Focus in Neck of the Femur. (Tuberkulöse Knochenherde im Schenkelhals.) W. Keppler and F. Erkes.
- 22 *Partial Occlusion of Large Arteries. W. S. Halsted (Baltimore).
- 23 Fenestrated Plaster Cast to Induce Local Passive Hyperemia. (Der gefensterter Gipsverband als Mittel lokaler Stauung.) Sprengel.
- 24 Fracture of the Calcaneus and Influence on Earning Capacity. (Entstehung und Behandlung der Calcaneusfrakturen und ihre Folgen in Bezug auf die Erwerbsfähigkeit.) Z. Brind.
- 25 *Tumors Induced by Sensitized Embryonal Cells. (Geschwülste, welche mittels sensibilisierter artgener Embryonalzellen erzeugt werden.) G. Kelling.
- 26 *Surgical Treatment of Suppurative Meningitis. Barth.
- 27 Diagnosis of Horseshoe Kidney. (Hufeisenniere.) M. Zondek.
- 28 *Kidney Calculi. (Zur Lehre der Nieren Calculose. Diagnose. Indikationsstellung. Pyelotomie.) M. Zondek.
- 29 Fracture of Head of Femur. O. Holbeck.
- 30 Resection of Tuberculous Hip-Joint. (Die Exstirpation des tuberkulösen Hüftgelenkes; Reposition des Gelenkkopfes.) B. Riedel.
- 31 *Removal of Second Spinal Ganglion in Treatment of Occipital Neuralgia. F. Oehlecker.
- 32 *Relations Between Phrenic Nerve and Cervical Neuralgia. F. Oehlecker.
- 33 Gleanings from Old Works on Military Surgery. (Kriegschirurgische Leseerfrüchte aus alter Zeit.) A. Köhler.

22. See THE JOURNAL, July 18, 1914, page 207.

25. Tumors Induced by Injection of Embryonal Cells.—Kelling says that Cohnheim's theory that tumors originate in or from embryonal cells seems very plausible for a certain proportion of tumors. We know that hydatidiform mole and chorio-epithelioma develop directly from embryonal cells. Kelling has been experimenting with chicken embryos injected into the abdominal cavity of a hen, at the same time that blood was injected elsewhere. This was followed by the development of tumors when the embryo-cell donors as well as the recipient hens had been previously sensitized by blood injections (albumin) and only when the donors had been sensitized long enough beforehand for the ova in the ovaries to feel the effect. The abdominal cavity was examined beforehand to exclude spontaneous tumors.

After the injection of the embryonal cells a tumor developed in five of the twenty-one hens. The structure of the tumors differed entirely from that of spontaneous tumors in hens; these are generally sarcomas. The blood used came from dogs, pigeons, and carp, but the only positive responses were with dog blood. In one instance the albumin was supplied in the form of liver with which the hen was fed. The results of these and his other experiments therefore sustain Cohnheim's embryonal cell theory as to the origin of certain tumors. They show further that alien albumin—even by the mouth—influences the development of these tumors. They seem to be directly connected with overfeeding with albumin.

This view is sustained, he adds, by the tumors which develop in trout fed with pig, beef or sheep liver, heart, or lung tissue as Gaylord and March reported in the *Bulletin of the Bureau of Fisheries*, April, 1914. A number of the problems involved might be settled by feeding healthy small animals through several generations with albumin. In human beings we know that disease in stomach or intestines renders the wall permeable to alien albumin; the greater the difference between the species, the greater the irritation it sets up. The infant intestine is very permeable for alien albumin, especially egg albumin. When a congenital tumor, of the types which correspond to Cohnheim's theory, is found in a child, the food the mother and child have been taking should be carefully investigated. One practical conclusion from Kelling's research is that, at least after a cancer has been removed, raw albumin had better be avoided. If it is eaten cooked, then the digestive juices will break up only so much as they can digest and the rest does not get into the blood. (Compare abstract 107, July 20, 1912, p. 231.)

26. Surgical Treatment of Purulent Meningitis.—Barth states that he has cured three patients with purulent meningitis by means of lumbar laminectomy and drainage of the dural sac, after lumbar puncture alone had failed to relieve. His first patient was a young man who had been stabbed in the spinal cord at the ninth thoracic vertebra and developed purulent meningitis. Barth trephined the spine at the point of the trauma but as the fever did not subside he then removed the laminae of the second and third lumbar vertebrae and drained the dural sac above and below, and prompt recovery followed. The second patient was a man of 37 with purulent meningitis after fracture of the base of the skull. Only transient relief was obtained by lumbar puncture repeated five times, but prompt recovery followed laminectomy on the third and fourth lumbar vertebrae. The third case was also of traumatic origin, the young woman having fallen on the street. In another case of traumatic purulent meningitis a complete cure was realized under two lumbar punctures alone. These experiences confirm the curability of purulent meningitis up to a certain stage; conditions here are much like those in the peritoneum and the same principles should be applied in treatment. Lumbar puncture has not only a therapeutic effect but it clears up the diagnosis and throws light on the prognosis, especially the discovery of polynuclear leukocytes. The bacteria may have disappeared from the fluid under the influence of the leukocytes. With tuberculosis, lymphocytes predominate.

28. Calculi in Both Kidneys.—Zondek discusses what plan to pursue when both kidneys contain concretions. The vessels should be respected at all hazards and he gives special directions for this. If the shadow cast by the stone is median from the shadow of the kidney proper, then pyelotomy may suffice.

31-32. Operative Cure of Unbearable Occipital Neuralgia.—Oehlecker has resected the second spinal ganglion for occipital neuralgia of the severest type and reports the complete cure of three of his five patients. The fourth has succumbed since to the progress of a cancer; the fifth was improved for a time but still has some trouble from the auricular nerve which had been injured in a previous operation for enlarged lymph-glands. He first excluded all causes which might have induced secondary neuralgia, including bearing of heavy loads on the head, infectious disease (malaria, meningitis, influenza and angina), gout and deforming arthritis and all processes, such as tuberculosis in the upper vertebrae, which might cause neuralgic pain as a symptom.

Along with the second spinal ganglion he resected the whole of the second cervical nerve and severed the anterior branch. The operation is not a simple one but there are so many intercommunicating branches that there is no disturbance from loss of the nerve. The neuralgia is cured at once and permanently. The operation is as feasible and logical as gasserectomy for trigeminal neuralgia. While gasserectomy has been largely supplanted by deep injection of alcohol this is not possible for treatment of occipital

neuralgia on account of the location of the nerves involved and the danger of injury to adjoining structures.

He further discusses the neuralgia in shoulder, neck and arm which may be traced to some lesion in or near the diaphragm. Pressure, chronic inflammation or true neuritis may be responsible for the neuralgia, but whatever the cause, the pains can be abolished by severing the phrenic nerve. This seems preferable to merely crushing it, he says, for reasons which he enumerates, adding that the participation of the phrenic nerve in cervical neuralgia is not appreciated as yet but it explains many puzzling cases, and he shows by diagrams the true connection.

Berliner klinische Wochenschrift

September 14, LI, No. 37, pp. 1621-1636

- 34 Contact Infection of Comparatively Little Moment in Spread of Cholera. F. Wolter.
- 35 Hypernephroma at Base of Tongue in Woman of 62. H. Coenen.
- 36 High-Frequency Electric Current in Treatment of Bladder Tumors. (Blasentumoren.) Renner.
- 37 High Amputation of Uterus to Arrest Pregnancy and Prevent Further Conception in Pulmonary Tuberculosis. (Methodik der Schwangerschaftunterbrechung und gleichzeitiger Sterilisation bei Lungentuberkulose.) M. Kunreuther.
- 38 Bouillon Cubes as Portable Dry Culture Media. (Trockennährböden.) Piorkowski.

Deutsche medizinische Wochenschrift, Berlin

September 10, XL, No. 37, pp. 1729-1752

- 39 Gunshot Wounds of Bones and Joints. (Behandlung der Knochen- und Gelenkschüsse.) A. Brentano.
- 40 Surgical Impressions from the Russo-Japanese War. Schäfer.
- 41 *Sterilization of Drinking Water in the Field. (Trinkwassersterilisation im Felde.) F. Croner.
- 42 *Rapid Course in Case of Deforming Spondylitis. (Seltener Fall von Bechterew'scher Krankheit.) Hoene.
- 43 *Chronic Intermittent Mild Technic for Treating Syphilis with Salvarsan. (Der Fehler in der Salvarsanbehandlung der Syphilis.) Kromayer.
- 44 Cervical Catarrh May Be Induced by Gonorrheal Threads Free from Gonococci. (Verursachen sterile Tripperfäden weissen Fluss?) Orlowski.

41. Sterilization of Drinking-Water for the Troops.—Croner remarks that filtration has not proved reliable for troops in the field, and addition of chemicals is not satisfactory on account of the high concentration required. The safest method is by boiling. The German army is supplied with portable apparatus for the purpose which every hour turn out 800 or 900 liters of filtered, sterilized and cooled water. The apparatus is drawn by two horses and weighs about 4,400 pounds. Smaller ones weighing only 100 pounds are also provided; they take apart so that the load can be distributed between two men.

42. Case of Ankylosed Spine.—Hoene's patient was a carpenter of 24 who developed Bechterew's disease consecutive to muscular rheumatism. The spine became rapidly rigid so that in six months he was scarcely able to move and had wasted away almost to a skeleton. Three similar cases were mentioned in the army report for 1908-1909; they had been mistaken for muscular rheumatism at first. Siegert has reported three cases much benefited by steam spraying, but nothing gave more than transient subjective relief in this case.

43. Treatment of Syphilis.—Kromayer advocates a chronic course of mild doses of salvarsan, beginning with 0.02 gm. and continuing with 0.1 gm. or 0.2 at intervals of a few days until 2 or 3 gm. of the drug have been given in the course of four to six weeks. The effect of this is fully equal to that of an intensive course of mercury during the same period. The general condition improves under the salvarsan, he says, instead of being depressed as with other drugs. Existing heart, kidney, liver or brain affections do not contra-indicate this mild course, only the caution must be redoubled, commencing tentatively with only 0.02 or 0.05 gm. salvarsan. His patients did not seem to stand well the combination of mercury and salvarsan, so now he alternates the course of each. The great drawbacks of salvarsan are its high price and the inconvenience of intravenous administration. For these reasons salvarsan in practical importance ranks below mercury.

Medizinische Klinik, Berlin

August 9, X, No. 32, pp. 1345-1376

- 45 *Progress in Clinical Diagnosis of Inherited Syphilis. (Physiognomik und Theorie der hereditären Syphilis.) J. K. Friedjung.
- 46 Examination for Catarrhal Apical Process. (Zur Untersuchung des Lungenspitzenkatarrhs.) R. Güterbock.
- 47 Induced Pneumothorax in Treatment of Tuberculous Pleuritic Effusion. (Behandlung tuberkulöser pleuritischer Exsudate mit Gaseinblasung.) F. Deutsch.
- 48 Mechanism of Action of Carbonated Baths on Weak Heart. (Wie wirkt das kohlensaure Bad, ist es ein schonendes oder gymnastisches Verfahren für das schwache Herz?) J. Jacob.
- 49 *Hematin in the Blood in a Case of Addison's Disease. (Morbus Addisonii und Hämatinämie.) H. Beuttenmüller.
- 50 Treatment of Acute Gonorrhea. Orlowski.
- 51 *Necessity for Combating Hypersecretion with Gastric or Duodenal Ulcer. W. Wolff.
- 52 Term "Metasyphilis" No Longer Justified. E. Schwalm.

August 16, No. 33, pp. 1377-1398

- 53 Care of the Wounded and after Sunstroke. (Versorgung der Verwundeten und Erkrankten im Kriege; Einrichtung der Militär-lazaretter im Operationsgebiete.) Brandenburg.
- 54 *Fracture of Transverse Process of Lumbar Vertebrae. A. Hoffmann.
- 55 *Vincent's Angina and Diphtheria. (Plaut-Vincent'sche Angina und Diphtherie.) F. Reiche.
- 56 Eruptions with Gonorrhea. C. Diernfellner.
- 57 *Fatal Potassium Permanganate Poisoning. (Kaliumpermanganatvergiftung.) E. Adler.
- 58 Modified Technic for Serodiagnosis. (Ueber die Verdauung von Placentapepton durch Serum—gemessen mit der Formoltitration.) E. v. Graff and P. Saxl.

August 23, No. 34, pp. 1399-1420

- 59 Prophylaxis of Contagious Diseases in the Army. (Verhütung der übertragbaren Krankheiten im Heere.) K. Brandenburg.
- 60 Beware of Venereal Disease. (W. v. G.: Warnung vor Geschlechtskrankheiten.) F. Pinkus.
- 61 Civilian Physicians in the Base Hospital. F. Pinkus.
- 62 Transformation of Treatment of Syphilis. (Wandlungen der Syphilistherapie.) H. Huebner.
- 63 Pathology of Peritonsillar Abscess. A. Proskauer.
- 64 *Examination of the Placenta for Gaps. (Beurteilung der Placenta hinsichtlich ihrer Vollständigkeit.) H. Küster.
- 65 Electric Treatment of Tabes. (Erfolge der Tabesbehandlung mit hochgespannten Gleichströmen.) F. Walzer.
- 66 Experimental Suture of Aorta. A. Hoffmann.

45. Clinical Diagnosis of Inherited Syphilis.—Friedjung declares that the physiognomy of children with inherited syphilis is so characteristic that he can pick out such children at a glance, as a rule, even although their syphilis may be entirely latent. There are three special types which he looks for, infants under 6 months, infants between 9 months and 2 years, and children 8 years old and upward. In young infants the head (skull and face) is round like a ball, as if it had been turned in a lathe; the complexion is a light coffee-color, and the child usually snuffles. One or more palpable lymph-glands can be detected, especially at the lower end of the internal sulcus of the biceps. Goldreich found one or more enlarged lymph-glands in 83 to 90 per cent. of his cases. Quite often the spleen and liver are also enlarged. Infants over 9 months old all display more or less rachitis and the pallor is striking, sometimes with a touch of yellow. The skull is usually large, either from moderate hydrocephalus or excessive bone growth at certain points (tubera) or diffuse with a deep groove along the sagittal suture. If the coronal suture is as if hollowed out too, the grooves cross and make four protruding regions. Other characteristic features are the broad flat nose and the fine radiating scars on the lips, relics of torn infiltrations at the margin of the lips. The cubital lymph-glands, spleen and liver are liable to be enlarged.

By the age of 8 the face forms an equilateral triangle, the point at the chin. The broad overhanging brow causes the eyes to seem sunken in; the face tapers downward owing to the shallowness of the upper jaw and the small mouth. The lips are small, pale and drawn up by the fine radiating scars; often scars left by specific eruptions can be detected near by. The nose has grown larger in proportion but still is of the suspicious flat, broad type with exposed nostrils. The grooves along the sutures are occasionally still evident but Hutchinson teeth are comparatively rare. Of the accessible lymph-glands the cubital may be found still enlarged. The children are pale and usually undernourished and are backward in their physical development as a whole. Among

ninety-four children representing these three types but with no actual manifestations of syphilis, the Wassermann was positive in 67 per cent. Transitional types are common. In a number of cases merely the facts that the children did not seem to be thriving on breast milk and that the cubital glands were enlarged suggested possible syphilis, and a tentative course of specific treatment for syphilis was followed by marked improvement.

51. Treatment of Gastric and Duodenal Ulcer by Combating Hypersecretion.—Wolff found hyperacidity evident in 51.8 per cent. of 56 cases of gastric ulcer and hypersecretion in 15.2 per cent., both together in 66 per cent. The proportion was even higher in 14 cases of duodenal ulcer, over 78.6 per cent. showing hypersecretion plus hyperacidity. This discovery of hypersecretion in two-thirds of the gastric ulcer cases and in three-fourths of the duodenal cases emphasizes the necessity in treating gastric or duodenal ulcer for measures to combat hypersecretion and hyperacidity, chief among which he lists emulsified fats, butter and cream, supplemented by atropin and all other measures useful in controlling excessive secretion. (Compare with abstract 64 in *THE JOURNAL*, October 17, p. 1429. Wolff has been working with Strauss.)

54. Fracture of Lumbar Vertebral Transverse Process.—The possibility of a fracture of this kind should always be considered when there are complaints of pain in the abdomen or lumbar region after lifting a heavy weight or trauma acting in this direction. Hoffmann reports a case: a man was pushing a boat into the water when he felt a sudden sharp pain in the lower part of the trunk, mostly to the left, and soon there was a swelling in the left inguinal region. This gradually subsided but the pains persisted, especially in the sacral region, on bending over, but examination showed nothing abnormal until roentgenoscopy revealed that the five transverse processes in the lumbar region had been fractured. The Roentgen findings were exactly like those Hoffmann had noted in a former case after lifting a heavy weight, bending forward. He gives illustrations of the conditions, traction from the muscles readily explaining the fracture. The only reason they do not fracture oftener is because the traction is perpendicular in the erect position and the broadest diameter of the transverse process then takes the strain. In the nine cases of the kind on record, including the one here reported, the first and second lumbar processes were fractured in four; the third in six; the fourth and fifth in two cases. The pain in the abdomen complained of at first in every case is due to irritation of trunk nerves from pressure or the hematoma. There is usually also a transient reflex rigidity of the abdominal wall from the same cause. There may even be sharp pain on pressure of the psoas which may suggest appendicitis if the trouble is on the right side. Other symptoms are local tenderness in the lumbar region on pressure from behind, and bending is painful. The disturbances may all subside in time but if they keep up from the pressure of callus or dislocated fragments, the disturbing element must be cut out. Such cases probably were labeled traumatic neuroses or the like before the Roentgen rays explained them.

55. Vincent's Angina Plus Diphtheria.—Reiche tabulates the details of twenty-three cases with the clinical and bacteriologic picture alone of the Plaut-Vincent angina, but diphtheria bacilli were found also in the throat. They did not modify the clinical picture in the least, however. Three of the patients were between 4 and 5 years old, one was 10, the others from 14 to 26 years old. Four had had diphtheria from one to nine years previously. Of the eighteen adults only two had a febrile temperature and one of these was the only one who had no spirilla. The other, a child of 4, developed severe fatal diphtheria of the tonsils after the angina had cleared up. It was most pronounced on the tonsil spared by the Vincent angina. In two other cases the angina and true diphtheria developed together and both ran a typical course; the patients were both 20 years old and only one recovered. The other developed pneumonia and died four weeks after the first symptoms of trouble. Antitoxin had been injected the fourth day but did not seem to modify the disease. In two other cases patients with the Vincent angina

became infected with diphtheria while in the hospital. These were the only ones that contracted diphtheria out of fifty with the Vincent angina erroneously admitted to the diphtheria ward; they were transferred to another ward as soon as the bacteriologic examination had shown the absence of diphtheria bacilli. The diphtheria ran an exceptionally mild course. The first mentioned group were evidently diphtheria bacilli-carriers, but there was no suspicion of this until the throat happened to be casually examined for another throat affection. The presence of the diphtheria bacilli did not seem to aggravate it or superpose true diphtheria except in three out of the total twenty-five cases.

57. Suicide with Potassium Permanganate.—A woman of 37 took 10 gm. of potassium permanganate in solid form and died the fourth day. When seen an hour after she had taken the drug there was no cyanosis but the breathing was very irregular, with pauses up to twenty seconds, during which the pulse dropped from 72 to 44, but the heart action kept good. Apnea has not been mentioned before as a symptom of poisoning from the drug. It subsided with the signs of acute intoxication and death was not due directly to the drug but to the complications, as in the two other cases of the kind on record, the corroding action of the chemical on the throat entailing phlegmons in the neck and pneumonia.

64. Examination of the Placenta.—When scraps of decidua come away with the placenta, they may protrude above its level like small tumors, and there may be corresponding small depressions when scraps of the placenta stick to the wall of the uterus. By examining the vessels at the edge of the placenta it is possible to detect the presence of a supernumerary placenta as a placenta succenturiata always has two arteries and one vein at least running to it from the main placenta, and these vessels break off if the other does not come away with it. A single torn off vessel does not necessarily indicate a supernumerary placenta; it may be merely a vessel which turned back on its course at the edge of the placenta. When a defect in the surface seems to indicate that part of the placenta is still adhering to the uterus wall, especially when a torn off vessel can be seen in the depths of the defect, certainty as to the significance of this is obtained by placing the placenta on a smooth surface, the maternal side up. The tip of a syringe containing milk is then introduced into the umbilical vein at one side, and milk is pumped into the vein. If the placenta is all there, no milk escapes at any point as the fetal circulation is in a closed vascular system. The placenta becomes distended with the milk but not a drop appears on its surface if it is intact. If not, the milk pours out of the torn vessel and this is at once a guide for further management of the case.

Münchener medizinische Wochenschrift, Berlin

September 8, LXI, No. 36, pp. 1897-1928

- 67 Experimental Proof of Occurrence of Protective Ferments under Various Conditions. (Die experimentellen Beweise für das Vorkommen von Abwehrfermenten unter verschiedenen Bedingungen.) E. Abderhalden.
- 68 Differentiation of the Three Genera *Cladotrich*, *Streptotrich* and *Actinomyces*. W. Rullmann.
- 69 Experiences with Spinal Anesthesia. (Lumbalanästhesie.) Gfroerer.
- 70 Causes of Death with Aneurysm of the Aorta. Pohrt.
- 71 Salvarsan and Soft Chancre. (Darf bei weichen Schankergeschwüren prophylaktisch Salvarsan angewandt werden?) H. Müller.
- 72 Prophylaxis and Treatment of Dysentery in the Field. (Ruhr im Felde.) A. Schmidt.
- 73 Injury of the Intestines from Contusion. (Stumpfe Darmverletzungen.) Lobenhoffer.
- 74 Combating Tuberculosis Among the Troops at the Front. (Bekämpfung der Tuberkulose in der Feldarmee.) A. Mayer.
- 75 Principles for Treatment of Gunshot Wounds. (Einige wichtige Grundsätze zur Behandlung der Schusswunden.) E. Graser and M. Kirschner.
- 76 Carbon Monoxide Poisoning on Steamship. (Schwere Kohlenäurevergiftung an Bord eines Lloydampfers.) Brausewetter.
- 77 Compression with Rubber Sponge to Arrest Bleeding from Gunshot Wounds. (Gummischwammkompression gegen Schussblutungen.) Werner.

Therapeutische Monatshefte, Berlin

September, XXVIII, No. 9, pp. 609-640

- 78 *Practical Obstetrics. (Praktische Ergebnisse der Geburtshilfe.) J. Hirsch.

- 79 *Inherited Syphilis Does Not Get Proper Treatment. (Die heutige unzureichende Behandlung der Lues congenita.) E. Welde.
80 Technic for Intravenous Injection of Colloidal Silver. (Was für kolloidales Silber wird intravenös injiziert?) J. Voigt.

78. Recent Progress in Obstetrics.—Hirsch remarks that the last few years have witnessed almost a revolution in favor of expectant management of childbirth. Various factors have contributed to this, among them the discovery of the action of hypophysis extract in stimulating the uterus to contract forcibly. It acts more rapidly than ergot, but its effect is less durable. The dose of ergot required to start the uterus to contracting is dangerously near the tetany dose, so that it is best to reserve ergot for the third stage of labor. Another recent acquisition is the appreciation of the fact that the height of the contraction ring is usually an index of the degree of dilatation of the os uteri. This can be felt from the outside during a labor contraction, the bladder empty. When the contraction ring is found four fingerbreadths above the symphysis, the os is fully dilated; with two fingerbreadths, it is open only to about the size of a 5 mark piece. This sign can be relied on, he declares; the only difficulty is that it is not always possible for the woman to empty her bladder. To draw the urine artificially is an internal maneuver which is just what we are trying to avoid. [Unterberger found this sign fail in only 5 per cent. of 300 women examined and the findings controlled by other means. The incorrect findings were explained in some instances by the fact that the bladder had not been emptied; only in three cases did the test give puzzling false findings. The gradual ascent of the contraction ring during normal labor thus enables us to supervise the course of the dilatation of the cervix. When it is completely open the contraction ring can be felt about four fingerbreadths above the symphysis, and it always lies across, he says, never slanting. Hoehne has found the ascent of the contraction ring especially valuable in warning of impending trouble, unfavorable presentation or overstretching of the lower segment of the uterus. Internal examination is necessary then to ascertain the true condition, but the rise of the contraction ring far above the symphysis gives the warning signal. This sign was first taught by Schatz in 1883, but its value has only recently been appreciated as a means of avoiding the necessity for internal examination.] In regard to puerperal fever, Hirsch says that progress has been along the lines of beginning to combat it early and protect the patient against local irritation. It has been noticed also that puerperal fever is liable to recur at the next pregnancy especially if the interval is short. It might be safer therefore to postpone another conception until the woman's defensive forces have finally destroyed any germs left behind.

79. Prevailing Inadequate Treatment of Inherited Syphilis.—Welde says that systematic reexamination of children treated with salvarsan has shown that it often transforms a positive into a negative Wassermann reaction. Persevering treatment is necessary for this, however, as a rule; the danger that a child might be overtreated is far outbalanced by the danger otherwise of inadequate treatment. When the history of children with congenital syphilis is traced into later life, the conclusion seems inevitable that, almost without exception, the treatment applied stopped considerably short of actually curing the child. When the Wassermann test is applied the proportion of the uncured is found appallingly high. Of 396 infants treated for congenital syphilis in Heubner's service at the Berlin Charité he was able to trace the later history of 200 of the children: 94 died in the hospital and 10 soon after dismissal and 14 died later of measles, etc. Of the remaining 82, he was able to examine 36, and found specific evidences of syphilis in 27. Only 9 were apparently healthy, with negative Wassermann.

Many of the children had been brought for only a single treatment; only 13 of the 296 polyclinic cases were under observation for two or three years. He urges physicians generally to keep track of child patients given salvarsan or other treatment. The prognosis of pemphigus, etc., has become more favorable since the introduction of salvarsan but whether on the whole it is superior to mercury for inherited syphilis is still a question. Proper nourishment is

as important as medicinal treatment, he insists, and the recent progress in infant feeding has been of great benefit for babies with the syphilitic taint. Last and far from least, he emphasizes the necessity for warding off other infections from these children. An epidemic of influenza sweeps them away by scores. This is an additional reason for organizing special institutions for children with inherited syphilis. They can be more easily protected against other infections while treatment can be systematic and adequate.

He is convinced that more careful examination of infants will reduce the number of cases of "tardy inherited syphilis," and permit treatment before irreparable lesions are installed. Since the Wassermann test has been systematically applied in asylums for the blind, crippled, deaf-mutes and imbecile, an unexpectedly large percentage of syphilitics has been discovered, as also in children's hospitals, etc. If a child coughs, the mother fears tuberculosis and takes the child to be examined by a physician, but it may be covered with a syphilitic eruption without suggesting to the mother that this is anything but "hives." Even if the mother suspects syphilis she thinks the child is doomed and that there is no use in contending against this. Education of the public is thus a vital necessity in this line. Welde urges that the state should seek out and cure early the children with inherited syphilis; this would release sums now devoted to maintenance of asylums for feeble-minded, etc. An important argument for the necessity of this is that the syphilitic infants are liable to infect healthy nurses; he has known of five cases in the last two years. The plan he advocates is that as soon as the inherited syphilis is discovered, the child should be given vigorous treatment in a special institution for a year, and then be sent home but kept under medical supervision and be sought out at home at regular intervals, and never lost track of. The parents should be held responsible for repetition of the course of treatment as the medical inspector reports that it is needed.

Therapie der Gegenwart, Berlin

August, LV, No. 8, pp. 337-384

- 81 *Pneumothorax Treatment of Bronchiectasia. W. Zinn.
82 *Chronically Weak Circulation. (Chronische Kreislaufinsuffizienz.) J. Pick.
83 *Chronic Pyelitis. M. Fritz.
84 *Extra-Uterine Pregnancy with Living Child at Term. B. Rewald.
September, LV, No. 9, pp. 385-408
85 The Postgraduate Course for Volunteer Army Surgeons. (Bericht über den Orientierungskurs für freiwillige Kriegsarzte.) A. Paasche.
86 *Treatment of Erysipelas. J. Arneht.
87 *Prophylaxis and Treatment of Typhoid. (Bekämpfung des Abdominaltyphus.) F. Neufeld.
88 War, Food and Alcohol. B. Laquer.
89 Consulting Surgeons at the Front. (Ueber die Stellung der konsultierenden Chirurgen des Feldheeres.) Stromeyer.

81. Pneumothorax in Treatment of Bronchiectasia.—Zinn reports three cases which encourage the hope that artificially induced pneumothorax may have a future in treatment of bronchiectasia. It is certainly logical, and if done before the tissues have become hopelessly rigid there is prospect of a complete cure. Even if this is not possible, enough collapse may be realized to amount to a clinical cure as long as the compression is kept up. In this case the pneumothorax may have to be maintained indefinitely as in a case of this type reported. The technic is the same as for compression of the tuberculous lung. The benefit from the pneumothorax was so prompt and permanent that he was almost inclined to doubt his diagnosis at first. The course of treatment need not be so long as with pulmonary tuberculosis (two months, three and five in his three cases). Therapeutic pneumothorax can be induced without harm in weak patients if done cautiously. Even bilateral bronchiectasia does not contra-indicate the method, taking one side at a time.

82. Underpressure Procedures in Treatment of Chronic Cardiovascular Insufficiency.—Pick recalls that the circulation is a physical process and hence can be aided by physical measures when it lags at any point. This is certainly more logical than to look to drugs for aid. He has found negative pressure procedures very useful. They start the blood to flowing from the periphery to the lungs. The full atmo-

spheric pressure is felt at the periphery while the pressure in the lungs is much below this. The blood consequently pours inward. This relieves the right heart and sustains those factors in the circulation which break down the most readily—parts which normally have to do two and a half times as much work as other parts.

He cites as an illustration of the benefit from systematic underpressure procedures in chronic insufficiency on the part of the circulatory apparatus the case of a man of 36 who had suffered for twenty years from what was labeled neurasthenia. His disturbances were so severe at times that he was unable to attend to business. The heart sounds were faint but pure, the pulse wave very small. Pick diagnosed the case as too little blood for the patient's size and weight; it did not reach the heart fast enough. Pick had him breathe in the underpressure apparatus three times a day for ten or twenty minutes at a time, arranging it for a negative pressure of 20 or 25 cm. water. By the second day there was considerable reaction, palpitations and vertigo, and then the condition improved remarkably and the patient was soon able to return to business with new zest in life. His supposed neurasthenia thus proved to be merely disturbances from chronic insufficiency on the part of the circulation. The tissues, especially the nerves, did not get enough blood to nourish them as the volume was small and the force to pump it into the lungs was inadequate. By starting a vigorous pumping process three times a day the forces were trained to do the work better and the nervous system received proper nourishment and recuperated throughout. Even if the former symptoms should return later, the benefit already realized during the months to date has been a great gain. The "neurasthenic" symptoms had included insomnia, distress, restlessness, palpitations, oppression, vertigo and loss of the senses of smell and taste. The return of the sense of smell the fifth day of the underpressure treatment was followed in a few days by return of the sense of taste. This return of these special senses has been frequently observed in his experience with cases of this kind; the starved nerves started to work again as soon as they got food.

83. Chronic Pyelitis.—Fritz states that he has encountered 161 cases of pure chronic pyelitis without participation of the parenchyma of the kidney, among his 1,800 urologic cases at the Wildungen spa. The pyelitis may exist for years on one side without the other becoming affected, and if it does, it seems to be traceable to the same primary source of infection as the first one. This is evidenced especially in the cases in which one kidney is removed as a prophylactic measure and months or years later the other kidney develops pyelitis too. The first kidney involved may recover and keep healthy while the second later in life may develop pyelitis. Treatment in acute cases or acute relapses includes regulation of the bowels and drinking large amounts of fluid (tea, lemonade or mineral water). He has never seen much benefit from hexamethylenamin, etc.

The primary source of the infection must be sought and cured. In the chronic cases copious fluid intake is also necessary but if the pyelitis persists, after the kidneys have been flushed in this way, local treatment is indispensable. His nine years of experience with local treatment have demonstrated its usefulness and harmlessness with aseptic precautions. The main point is to assume that the bladder always contains pathogenic germs which are liable to be carried up into the kidney pelvis. Boric acid is not strong enough to kill them, so he uses a solution of mercuric oxycyanid (Hydrarg. oxycyan.) to fill the bladder, and then rinses out the kidney pelvis with a stronger solution (1 to 2,000) until the fluid comes away clear. He then injects a 1 to 200 solution of collargol to be retained. The pyelitis may take long to heal, but with pure pyelitis a cure may always be counted on if the urine gets an outlet by systematic catheterization of the ureter. He thinks the mechanical influence of the catheterization is at least as important as the medication. Even when there have long been severe symptoms and the general health is materially impaired this combination local treatment should be given a persevering trial before considering nephrectomy.

84. Extra-Uterine Pregnancy with Viable Child.—Essen has compiled twenty-five additional cases since Sittner's compilation of 142 in 1903. The list includes a case from his own practice, a primipara of 30 at term. The breech of the fetus could be palpated in the left lower abdomen, the head in the right epigastrium; the back forward; the heart sounds were audible to the right of the umbilicus. The child was thus unusually high in the abdomen and the cervix was not dilated. During the course of pregnancy there had been occasional severe pains in the abdomen and back, returning at times every day, followed by long intervals of freedom from pain. There had been pain and hemorrhage for one day the second month but there were no pains from the third to the ninth month. They then returned extremely severe, like labor pains. The uterus was found to be empty and a normal girl baby, 51 cm. long, was delivered through an abdominal incision below a Momburg tube constricting the waist to prevent excessive loss of blood.

Four physicians had examined the woman superficially during the pregnancy but only one suspected extra-uterine pregnancy and advised an operation. If the history of the case had been heeded none could have overlooked the extra-uterine location of the fetus. There is usually bleeding for one day to several weeks and the hemorrhage is always accompanied with pain. This is a striking symptom and is never absent with early complications. In 277 cases of extra-uterine pregnancy there was pain in all but thirteen cases. The pain generally comes on suddenly and is severe, sometimes on one side only and radiating into the legs. As the pregnancy progresses, the pains become less severe but more persisting; they are due to interference with neighboring organs. Pains like those of labor may occur from accumulation of secretions in the uterus or expulsion of decidua or actual colic in the uterus. If the fetus lies free in the abdominal cavity, its movements may cause intolerable pain. In the early stages the pregnancy may be suspected from the livid discoloration of the entrance to the vagina. Expulsion of decidua was known in only 22 of the 277 cases, and in 5 not until the third to fifth day after the operation. In the case reported the placenta was twice the normal size and in three lobes; one presented toward the left ilium, one to the mesocolon and the third to loops of small intestine. The membranes ruptured as the child was being extracted and a number of bleeding vessels had to be ligated. The patient was able to be up in less than a month. The child is now five years old, normal and healthy.

86. Erysipelas.—Arneth reviews his experience with several hundred cases of erysipelas. He has encountered a few rapidly fatal cases, among them that of a healthy man between 30 and 40 who died eight days after the onset of severe erysipelas; staphylococci were found in pure cultures in the tissues. In another case a healthy woman of 46 developed erysipelas after removal of a small dermoid cyst on the arm. The erysipelas spread over the whole body and fatal paralysis of the heart developed. In such severe cases all treatment is futile, and in the mild cases spontaneous recovery is the rule whatever treatment is applied. It is important however to restrict the spread of the erysipelas and he has never found anything so effectual for this as painting the region and vicinity with a 5 per cent. oil solution of phenol. This is applied three or four times a day, leaving the area uncovered all the time. There is no caustic action from the phenol and the tissues are not irritated as by application of salves or dressings. The thin coating of oil softens the skin and works its way in; it relieves the pain and tension and by its anesthetic action tends to subdue the inflammation. In his years of experience with this carbolyzed-oil treatment he has never witnessed any signs of intoxication from it, and it does not stain the linen. This principle of refraining from irritating procedures and anything that might force the germs into the depths of the tissues, he thinks, should be followed in treatment of all suppurative processes. He refrains from touching even a blister, and never tries to cleanse the erysipelas region until several days after all signs of inflammation have subsided. Then he clears off

with olive oil any loose skin, not permitting water for some time yet. Otherwise there is danger of the process flaring up again; still virulent germs might easily be mobilized by any manipulations of the kind. He reviews numerous other methods of treating erysipelas as practiced by about fifty other clinicians, but thinks the phenolized oil surpasses them all in efficiency. Treatment can be only symptomatic but everything that builds up the general condition is a help, sustaining the heart, possibly also whipping up the neutrophil leukocytes. He remarks that it is odd that the diseases with pronounced neutrophil leukocytosis, pneumonia, diphtheria, tonsillitis and erysipelas, do not immunize against future attacks, but instances are known of complete recovery from leukemia after intercurrent erysipelas. Glaser has reported a case of severe dropsy with subacute nephritis in a boy of 12 who was permanently cured after an attack of erysipelas.

87. **Prophylaxis of Typhoid.**—Neufeld states that with all the efforts to exterminate typhoid in the protected area in southwestern Prussia in the last ten years the disease has not been eradicated. The number of cases has dropped from 3,487 in 1904 to 1,097 in 1913. The persistence of the disease is due in large measure, he thinks, to the early contact infection of others occurring during the incubation stage. Experience has shown that washing the hands after defecation and before eating is perhaps the most important prophylactic measure. If all could be trained to do this systematically, many illnesses would be saved, not only typhoid but various other diseases.

Zentralblatt für Chirurgie, Leipsic

September 12, XLI, No. 37, pp. 1465-1488

- 90 *Permanent Diversion of Fluid with Ascites. (Zur Dauerdrainage bei Ascites.) A. Oberst.

90. **Continuous Drainage of Ascites.**—After the fluid has been drawn, the skin is always relaxed and Oberst cuts a flap from it, leaving half of the flap still attached to the subcutaneous tissues. The other half is dissected loose and is worked through a small laparotomy incision down into the abdominal cavity. The skin is then sutured over it. The interposition of the skin flap in the incision prevents its growing together, and thus a constant communication is maintained between the abdominal cavity and the subcutaneous cellular tissue permitting fluid to drain freely into it. Oberst gives illustrations of four modifications of the principle involved.

Zentralblatt für Gynäkologie, Leipsic

September 12, XXXVIII, No. 37, pp. 1233-1248

- 91 *Dangers of Intra-Uterine Pessary. (Ueber die Gefahren des Intra-uterinstiftes.) E. Opitz.

91. **Dangers of Intra-Uterine Pessary.**—Opitz reports two cases in which a Fehling glass tube was introduced into the uterus as the women were sterile and longed for children. Fatal peritonitis developed in one case and severe inflammation in one ovary and tube in the other case, requiring several weeks of conservative measures in the hospital before it subsided. He ascribes the trouble in both cases to the intra-uterine pessary.

Gazzetta degli Ospedali e delle Cliniche, Milan

September 3, XXXV, No. 105, pp. 1105-1120

- 92 Difference in Blood Pressure on the Two Sides with Neuralgia. A. Campani.

September 10, No. 107, pp. 1137-1152

- 93 *Pneumonia Due to Staphylococcus Albus. C. B. Farmachidis.

September 13, No. 108, pp. 1153-1168

- 94 Transvesical Prostatectomy: Three Cases. (Operazione del Freyer nella cura dell'ipertrofia prostatica.) O. Ortali.

93. **Staphylococcus Pneumonia.**—The patient was a man of 39; both the right lung and the pleura were involved and there was a pleural effusion. The crisis came the eighth day and the man started on a favorable convalescence but this was interrupted in a day or so by a return of pleuropneumonia in a severer form accompanied by symptoms indicating irritation of the meninges. The *Staphylococcus albus* was

alone cultivated from the pleural effusion and from the blood-stream. The delirium subsided by the twelfth day from his first symptoms and rapid recovery followed.

Brazil-Medico, Rio de Janeiro

August 15, XXVIII, No. 31, pp. 297-306

- 95 Large Aneurysm of the Descending Aorta Protruding in the Back. F. Luz.

August 22, No. 32, pp. 307-316

- 96 Guiding Treatment of Syphilis by the Wassermann Reaction. (Do critério científico no tratamento da syphilis pela reacção de Wassermann.) D. Madeira.

Hospitalstidende, Copenhagen

September 16, LVII, No. 37, pp. 1137-1168

- 97 *Juvenile Deforming Osteochondritis; Five Cases. (Fem Tilfælde af Calvé—Perthes Sygdom.) K. Michelsen.

97. **Juvenile Deforming Osteochondritis.**—The Roentgen findings and the negative tuberculin skin reaction are the criteria which distinguish a hip-joint affection described by Calvé (1910) and Perthes (1913). (It was described in these columns May 2, 1914, p. 1444.) Michelsen here reports with illustrations five cases some of which date from before this, and which he had already recognized as something apart from the general run of hip-joint diseases. He thinks that it is the same as Köhler's disease only that the localization is different. There is no doubt that it has frequently been erroneously diagnosed as a tuberculous process. Massage to prevent atrophy of the muscle should accompany the immobilization of the joint called for by the severe changes found in the bone.

Ugeskrift for Læger, Copenhagen

September 10, LXXVI, No. 37, pp. 1579-1626

- 98 *Operations on Tendons. (Senesutur og Senetransplantation.) C. D. Bartels and J. Jensen.

- 99 *Roentgen Treatment of Superficial Cancer. (Om Røntgenbehandling af hudkræft.) J. Nordentoft. Commenced in No. 36.

September 17, No. 38, pp. 1627-1654

- 100 Cancer in the Ear; Three Cases. (Om Oeregangscarcinom.) E. A. Hallas.

- 101 Pseudomyxoma in the Peritoneum of Appendicitic Origin. H. S. Billmann.

98. **Operations on Tendons.**—The clinical and experimental research reported demonstrates that a severed tendon will heal after suture without immobilization, and healing occurs even sooner and more perfectly when the part is exercised. The histologic findings at various intervals after the experiments on seventy rabbits are described in detail—all confirming the prompt and complete restoration of approximately normal conditions when the part was used from the first. The lessons learned from this research were advantageously applied to a girl of 10 to correct contracture of the finger. The autoplasmic transplantation was hampered by considerable scar tissue. This was resected and the tendon which had been bound down by adhesions was loosened up for 3 or 4 cm. The gap in the tendon, extending from the metacarpophalangeal articulation to a little beyond the first phalangeal joint, was bridged with a segment cut from the tendon of the palmaris longus. The transplant was embedded in the subcutaneous fat tissue and the wound healed by primary intention but opened again the tenth or twelfth day and scraps of fat and tendon tissue were expelled, after which all healed anew. Active and passive movements were begun the second and third day and kept up even while the necrotic tissue was being expelled. Now, a year since, the finger can be used fully and perfectly except for a trace of stiffness in the second phalangeal joint. In another case of contracted and stiff finger after a destructive felon he applied the same technic, only that to strengthen the tendon, prevent adhesions and promote its viability he wrapped the tendon in a strip of fascia from the forearm. It soon healed but two weeks later the whole of the implant was cast off. The scar tissue from the long median incision evidently afforded no possibility of nourishment for the implant. It would be better, on this account, to treat felons and phlegmons with several small side incisions rather than with one large one.

99. See abstract 89 in THE JOURNAL, Oct. 17, p. 1432.

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THE WEIR MITCHELL LECTURE

SURGICAL EXPERIENCES WITH PITUITARY DISORDERS*

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Our variously acquired bits of information concerning the ductless gland disorders lie distractingly before us like the fragments of a modern picture puzzle. Here and there a few pieces, possibly on the basis of similarity of color, have been assembled and fitted together, but the relation of these groups to one another or to the design as a whole is not at all clear. Some of them subsequently prove to have been upside-down; marginal groups are found to belong at the side when they had been thought to go at the top; and the disappointing stage is always reached when pieces appear to have been irrevocably lost. A chance bystander with an eye for form picks up an odd piece, fits it into its proper place, and it immediately becomes apparent from the new outline that two isolated groups or foci of the picture can be articulated. So in the ductless gland puzzle, out of a jumble of fragments the pituitary group of pieces has come to be assembled; and though it is not quite complete in itself, nor is it quite clear where it will go in the finished picture, we at least know what it represents and which is top and which is bottom.

Thus while others were brooding over the thyroid and adrenal, Marie fitted together some oddly fashioned and disconnected pieces, and behold, acromegaly! Fröhlich fifteen years later made another symptomatic grouping of tumor, optic atrophy, adiposity and sexual infantilism; and though subsequently a few isolated pieces were marginally attached to each of these growing foci of the picture, it was not until the series of experiments with Crowe, Homans, Goetsch and Jacobson in the Hunterian Laboratory in Baltimore in 1908 and 1909 that Fröhlich's syndrome of dystrophia adiposogenitalis was observed to be wrong side up, for when reversed it fitted into Marie's fragment, making hypopituitarism and hyperpituitarism.¹

During the six years which have since elapsed the clinical manifestations of pituitary disorders have been so widely discussed that physicians to-day are quick

to recognize their constitutional expressions when full-blown, but as our acquaintance with these conditions progresses it becomes increasingly apparent that minor evidences of a functional glandular disturbance occur with considerable frequency but fail to cause comment of any kind. Indeed, in the ordinary walks of life beyond hospital walls outspoken examples, not only of acromegaly, but of the more newly appreciated syndrome of hypophysial insufficiency, are encountered sufficiently often to make us realize that a pronounced constitutional evidence of dyspituitarism in one direction or the other need not be incompatible with a reasonably comfortable and effective life or cause the victim to seek medical advice on the score of physical incapacitation.

When, however, a pituitary derangement, even of lesser grade, is accompanied by an extreme glandular enlargement, or when the secretory activity of the gland is impeded by the pressure of a suprasellar tumor, disturbing symptoms may arise of quite a different order from the constitutional expressions of the disease. Just so may a goitrous thyroid flatten the trachea and mechanically embarrass respiration, whether or not the struma is accompanied by symptoms of hyperthyroidism or hypothyroidism, or even in the absence of any appreciable endosecretory manifestations whatsoever. These local and neighborhood symptoms being essentially of a mechanical (pressure) nature call for mechanical (operative) means of relief; and the aspects of pituitary diseases which deal with the glandular enlargement or tumor will be made the main topic of this lecture. Naturally the experiences of a surgeon comprise a high percentage of cases of this order.

It may be recalled that much of our knowledge of pituitary disorders has revolved around the question of tumor—using the term in a comprehensive sense. It was the presence of a tumor which first led Marie, and subsequently Fröhlich, to couple with this comparatively obscure gland the syndromes which bear their names. And for the most of us to-day manifestations of tumor continue to be a necessary guidepost, so that those who venture to predict pituitary disease in their absence do so with misgivings and merely on the ground that similar constitutional symptoms have been known to arise in conjunction with a growth.

With all this stress upon the tumor and its local manifestations we must not overlook the fact that the constitutional indications of pituitary disease may bear little relation to the size of the lesion, for outspoken acromegaly may occur with but little enlargement of the gland, and the counterposed secretory state may accompany a primary glandular hypoplasia, so that tumor may not enter into the question at all. Con-

* This paper formed the basis of the eighth Weir Mitchell Lecture, before the College of Physicians of Philadelphia, Feb. 25, 1914. As delivered it was fully illustrated by composite lantern slides portraying the varied clinical types of dyspituitarism in the author's series, chief emphasis being laid on the sellar deformations, on the histologic character of the various lesions, and on the perimetric fields before and after the operation. As these illustrations are too numerous for reproduction in a single article, the address in its present form is largely reduced to the mere statistical consideration of the operative results.

1. The Hypophysis Cerebri: Clinical Aspects of Hyperpituitarism and of Hypopituitarism, *THE JOURNAL A. M. A.*, July 24, 1909, p. 249.

versely, a surprisingly large tumor producing extreme distortion of the structures of the interpeduncular space may give insignificant and hardly appreciable clinical evidence of its presence.

So far as the endosecretory expressions of pituitary disease are concerned the subject is rendered increasingly complex as soon as we attempt to differentiate between the symptoms produced by the two lobes of the gland, for they have very different physiologic activities. It is possible that there may be an overaction or underaction of one lobe alone, or an overaction of one lobe associated with insufficiency of the other: and as in the case of the adrenal cortex versus the medulla, attempts have been made to disengage

leads to more or less evident disturbances in other members of the series, but with the qualification that a primary disorder of any individual gland or pair of glands, whether on the side of oversecretion (perversion?) or undersecretion, produces its own peculiar group of symptoms. With some of the resultant syndromes we are already familiar. For example, a primary pituitary insufficiency, whether of childhood or adult life, bears a certain resemblance in its constitutional manifestations to a thyroid insufficiency in an individual of corresponding age; yet the two conditions, even without a tell-tale glandular struma, are easily distinguished. The insufficiencies of adrenal, parathyroid and pineal glands, of the islets of the pancreas, and of the interstitial cells of testis and ovary, likewise give rise to their own peculiar syndromes; and though we know little of the constitutional expressions of the reverse conditions, except in the case of the thyroid (exophthalmic goiter) and the pars anterior of the pituitary body (acromegaly), yet we have reason to believe that the recognition of corresponding states of primary overaction of the other glands will be forthcoming.

So far as is now apparent, a functional hyperplasia of the pars anterior of the pituitary body stimulates tissue growth, chiefly apparent in the skeletal, cuticular and subcuticular tissues, but at the same time, as the feeding experiments of Goetsch would indicate, there is an excitatory effect on the reproductive apparatus, reflected on the secondary characters of sex.³ Conversely, anterior lobe insufficiency should inhibit skeletal growth and sexual development. Little is known, on the other hand, of the consequences of functional hyperplasia of the posterior lobe. This portion of the gland appears to be more concerned with tissue metabolism, for when rendered inactive by disease or by compression, metabolic processes are checked; a high tolerance is acquired for carbohydrates, which are promptly stored as fat; there is drowsiness, insensitivity, slow pulse and respiration, with a lowered respiratory quotient, a subnormal temperature, low blood-pressure and so on. This complex of symptoms, as has been pointed out,⁴ in some measure simulates the phenomenon of

hibernation, a state in which the metabolic fires burn low, and one in which marked histologic changes have been shown to occur in the gland—changes which suggest a seasonal wave of physiologic inactivity.

A tendency to progress toward a state of relative glandular inactivity is apparent in most cases of pituitary disease. It is true that hyperpituitarism may be recovered from without subsequent hypopituitarism, but commonly symptoms of glandular insufficiency are



Fig. 1.—To show anatomic relation of structures concerned and illumination of operative field; also position of patient, with modified Sewell mouth-gag and tongue-elevator in place; sponge in retropharynx (no longer used); lip being elevated preparatory to making the sublabial incision.

from the combined picture the symptomatology of a lesion confined to one or the other anatomic division.² Furthermore, additional complexity is added by the polyglandular nature of every ductless gland disorder, which in some cases is so apparent as to make it doubtful which of the endosecretory organs is primarily at fault.

As I have said elsewhere, I feel that our most helpful working basis accepts the now prevalent view that derangement of any one of these correlated glands

2. Concerning the Symptomatic Differentiation Between Disorders of the Two Lobes of the Pituitary Body, *Am. Jour. Med. Sc.*, 1913, cxiv, 313.

3. The Pars Anterior and Its Relation to the Reproductive Glands, *Proc. Soc. Exper. Biol. and Med.*, 1913, xi, 26.
4. Hibernation and the Pituitary Body, *Proc. Soc. Exper. Biol. and Med.*, 1913, xi, 25.

in the course of time superimposed on those of outspoken acromegaly. Moreover, it is sometimes possible to recognize by radiographic studies slight evidences of antecedent acromegaly in individuals in whom present signs of hypopituitarism are the outstanding and conspicuous expressions of the disorder. It was an appreciation of this mixture of symptoms which made it seem advisable to adopt the term "dyspituitarism" to cover all types, though numerous examples, particularly of glandular insufficiency, lie unquestionably on the side of hypopituitarism from the outset.

Many symptoms of former etiologic obscurity, other than those of accelerated or retarded skeletal growth, are so often associated with dyspituitarism that when they occur in more or less isolated fashion a suspicion of pituitary disease is now aroused. This is particularly true of many forms of obesity; but it must be realized that there are lean as well as fat examples of pituitary disorder, as I shall have occasion to illustrate, and it may be recalled that emaciation has been shown experimentally to be a consequence of the administration of posterior lobe extracts over long periods. Other symptoms of moment are the hypophysial polyurias, which are thought by some to be the key to diabetes insipidus.⁵ Stages of undue drowsiness, some of the psychoses,⁶ disturbances in the sexual sphere, as amenorrhea or impotence, delayed or precocious puberty, likewise suggest in many cases a hypophysial influence and lead us to-day to scrutinize the patient for possible correlated secretory or neighborhood symptoms.

These, to repeat, are among the constitutional symptoms due to changes in the secretory activity of the gland, and their treatment calls for glandular therapy, administered so far as may be possible, to offset the

apparent insufficiency of one or the other pituitary lobes. Happily the results of glandular feeding are often as gratifying as in the case of thyroid insufficiencies, but I am doubtful whether the functional hyperplasias of early acromegaly, in the absence of neighborhood disturbances, should be attacked by a partial removal of the gland, as is practiced in exophthalmic goiter; for hyperpituitarism, as I have pointed out, tends more often to become stationary or even to pass over into the stage of glandular inactivity than

does hyperthyroidism. Still, promising results have followed such procedures, and I have occasionally been led to make a fractional hypophysectomy in cases of acute acromegaly when the patients have been victimized by severe pituitary headaches from distention of the capsule—a surprisingly infrequent form of discomfort as a matter of fact, for even the hypertrophied sella of acromegaly readily gives way to pressure.

It is quite a different matter when pronounced neighborhood disturbances are present, whether or not they are accompanied by endocrine evidences of the disease; and in a series of 148 cases⁷ regarded as primarily hypophysial, 101 have shown definite local

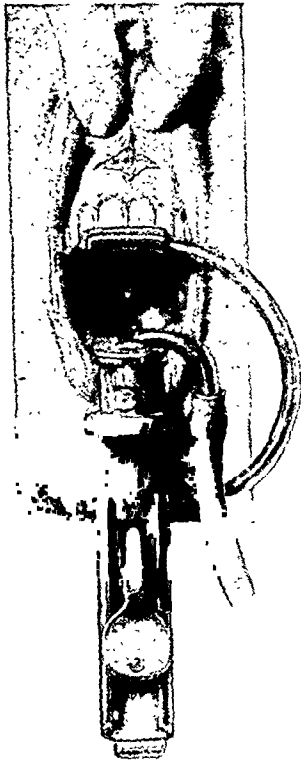


Fig. 2.—Anterior view of field with mouth-gag in position; also the small transverse Loewe-Halstead incision across the frenum. (In this and the following sketch the view of the parts is upright, the reverse of the operator's view during the procedure.)

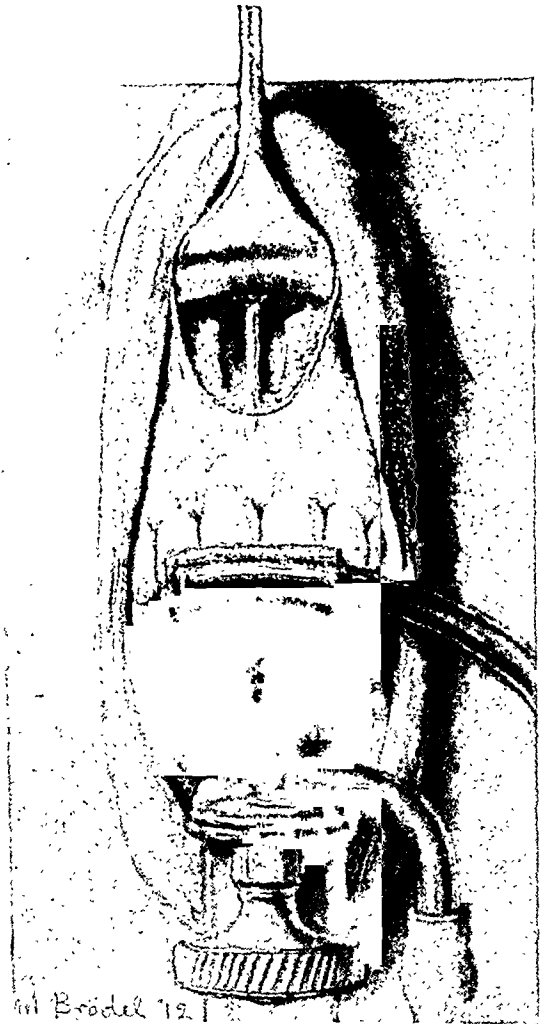


Fig. 3.—Exposure by blunt dissection of the lower edge of the cartilaginous septum. The mucous membrane is elevated from the septum to a considerable depth preparatory to the introduction of primary retractors.

signs of pressure implication of structures in the immediate vicinity of the gland.

I confess to the difficulty of satisfactorily classifying all of the examples of hypophysial disease of which I have records without running into too great complexity. I struggled with the subject rather ineffectually three years ago at the time of preparing a monograph on the subject, when there was much less material at hand to illustrate the varied types of dyspituitarism. Nevertheless it is necessary to give some idea

5. Concerning Diabetes Insipidus and the Polyurias of Hypophysial Origin, Boston Med. and Surg. Jour., 1913, clxviii, 901.

6. Psychic Disturbances Associated with Disorders of the Ductless Glands, Amer. Jour. Insan., 1913, lxix, 965.

7. At the time this lecture was delivered the series was limited to 136 cases. I have taken the liberty of bringing the statistics up to date (June 1, 1914) by including the cases observed in the succeeding four months.

of the character of the cases which are to be reviewed from the standpoint of surgical treatment, and for present purposes they may be divided into two groups—namely, the 101 cases presenting definite tumor manifestations and the forty-seven cases without these local signs of the disease.⁸

These 101 cases may be conveniently subdivided into the forty-eight cases in which the tumor has apparently arisen from some suprasellar source—usually from a congenital anlage—and the fifty-three cases in which an actual enlargement (struma) or tumefaction of the gland itself has served to call forth the local symptoms. Radiographic and perimetric studies are to be largely depended upon in distinguishing between these two

great enlargement of the sella; on the other hand, a superimposed tumor may wipe out the sellar outlines and cause blindness, simulating a primary glandular tumefaction were dependence to be placed solely upon the late x-ray disclosures.

Let us return for a moment to a further brief analysis of the 148 cases on the basis of their endocrine or constitutional symptoms, irrespective of a tumefaction or otherwise of the gland or its environs.

1. The characteristic skeletal metamorphoses of acromegaly were apparent in forty-three cases. 2. The reverse clinical picture, namely, that of glandular insufficiency, was evident in ninety-four cases, some of them of the fat and some of the lean type, and almost all with more or less marked secondary genital dystrophy, though it must be acknowledged that in many, particularly the adult cases, the constitutional manifestations were so inconspicuous that they might have been overlooked had not pronounced neighborhood signs and symptoms been in evidence. 3. Finally, there occur in the series twelve cases of obvious polyglandular involvement, in which the hypophysis merely participates, without reasonable assurance that it is the primary source of the endocrine disorder. In our present connection these three groups deserve further consideration, on the basis of the coexistent neighborhood disturbances—in other words, on the basis of the presence of symptoms which call for operative rather than medicinal therapy.

1. *Endocrine Symptoms on the Side of Hyperpituitarism.*—In so far as its skeletal changes are concerned, acromegaly represents a permanent structural alteration, whether or not the secretory disorder which incites these alterations has ceased to be active. This is often a matter most difficult to determine, for doubtless, as in hyperthyroidism, the periods of activity of the process may occur in waves. Only when outspoken manifestations of glandular insufficiency are of long standing in cases in which there are coexistent skeletal evidences preceding acromegaly, is it safe to say that hyperpituitarism has permanently subsided. Of the 43 cases listed in the group of acromegalics (including 7 acromegalic

giants), in 30 the typical features of this derangement were pronounced, whereas in 13, though unmistakable, they were far less evident, there being 4 examples in which traces of acromegaly would have been overlooked without roentgenologic studies.

Hence it is conceivable that in a still larger proportion of the patients an antecedent wave of hyperpituitarism may have occurred, though not sufficient to bring about any demonstrable fixed skeletal changes.

All of these cases in the acromegalic group showed sellar changes, varying from moderate enlargement of the fossa with the characteristic thickening of its walls to conditions of extreme distention. It is notable, however, that in only 20 of the 43 cases was any chiasmal

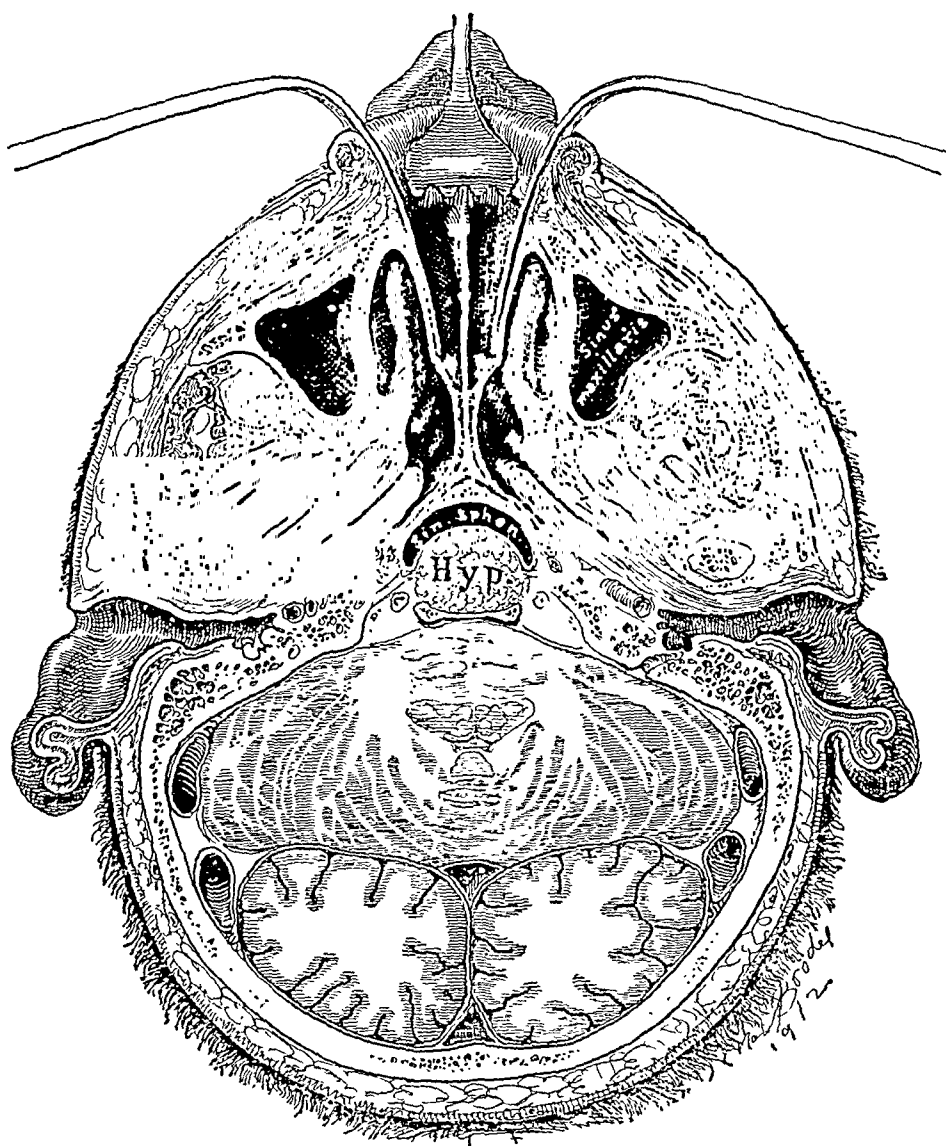


Fig. 4.—Horizontal section to show position of the lateral retractors introduced between the reflected mucous membrane and the denuded septum

conditions, and it may be said in general of individuals manifesting neighborhood complications that those showing acromegalic tendencies usually represent cases of primary glandular (intrasellar), and those with adiposogenital dystrophic tendencies cases of supraglandular (or suprasellar), tumor. However, this rule is far from dependable, for exceptions arise, particularly in the large group possessing huge glandular strumas with insignificant signs of dyspituitarism. Moreover, a primary glandular struma may burst through the dural capsule and involve the chiasm and other interpeduncular structures without any very

8. It should be noted in this connection that the mere enlargement of the sella, whether in association with acromegaly or otherwise, is not included among the so-called "neighborhood symptoms."

involvement demonstrable on perimetric tests at the time of admission, and moreover that these 20 cases, with but a few exceptions, were all ones in which a large struma had developed with coincident signs of pituitary insufficiency. Only one or two of the cases in the stage of advancing acromegaly showed deformations of the visual fields. Thus more than half of the patients in this the acromegalic group gave no outspoken neighborhood indications of tumor demanding operation, though it must be confessed that in one or two cases large unsuspected intracranial extensions of the struma which did not implicate the chiasm have been found post mortem.

In a number of these patients the polyglandular involvement was clinically apparent, for, in addition to the more common secondary disturbances on the part of the reproductive glands, they showed either coexistent goiters, or diabetes, or pigmentation with asthenia suggesting adrenal participation. However, in these cases the acromegalic changes were sufficient to overshadow the evidences of derangement of the other glands, and to stamp the condition as of primary pituitary origin.

In almost all of the cases subjected to operation the tissues removed proved to be more or less rich in acidophilic cells, whereas neutrophilic cells characterize the strumas of hypopituitarism.

2. Endosecretory Symptoms on the Side of Hypopituitarism.—This group possibly should include the 20 acromegalics spoken of above in whom there were distinct evidences of present glandular insufficiency. It will, however, in the present analysis be limited to the 94 cases in which the endosecretory manifestations appeared to be on the side of insufficiency from the outset. In 82 of these cases pronounced tumor symptoms were present. The 12 which were free

from these neighborhood symptoms presented the typical constitutional picture of adiposogenital dystrophy, in association usually with an undersized sella. The absence of local symptoms naturally does not preclude the presence of a growth, for, as has been pointed out, the interpeduncular congenital lesions may be tolerated for years and may reach a considerable size before giving symptoms, but it is presumptive that the majority of the 12 cases represent a primary glandular hypoplasia without tumor.

The 82 cases with tumor may be grouped as follows: (1) 10 cases of adiposogenital dystrophy with tumor in which the onset of symptoms antedates adolescence—the typical syndrome of Fröhlich; (2) 8 cases of

genital dystrophy with tumor but with extreme leanness rather than adiposity; (3) 63 cases in which the symptoms have arisen in adult life, often with retrogression of the secondary characters of sex, a more or less marked tendency toward the deposition of fat and invariably with pronounced neighborhood symptoms. As a matter of fact, however, in about half of these cases the constitutional evidences of hypophysial disorder were so relatively inconspicuous that without a localizing diagnosis the patients would readily have passed muster as normal (from an endosecretory standpoint) individuals.

In 29 of these 63 cases the lesion was of intrasellar origin—the so-called pituitary goiter or chromophobe struma, which in 4 instances had assumed malignant

tendencies—and the radiographic outlines of the distended fossa were more or less completely obliterated. In the majority of the remaining 34 cases the lesion presumably arose from a suprasellar source, it having been certified in 15 cases as follows: developmental cystic tumor, 7; developmental solid (mixed) tumor, 6; endothelioma, 3; tuberculoma, 1. Though the existence of a retrochiasmal or suprachiasmal growth is reasonably certain in the 19 other cases, the diagnosis has not been assured by operation or necropsy.

3. Endosecretory Symptoms of a Polyglandular Character.—Here are included 12 cases with obvious pituitary implication but in which it is not apparent that an hypophysial disorder is the underlying element, unlike the cases of acromegaly mentioned above in which polyglandular manifestations are also clinically recognizable. They are cases in which a pineal, thyroid, adrenal, testicular or ovarian symptomatology is sufficiently pronounced to make a primary hypophysial disorder questionable. Three

of these patients have been subjected either to a cranial exploration or decompression for relief of pressure symptoms, but their further consideration is beyond the scope of this report.

Perimetric Deviations.—The tumors or glandular strumas which accompany pituitary disease enlarge slowly, and symptoms may often be traced back for many years. Though as a rule the optic chiasm is the first of the neighborhood structures to suffer, it is extraordinary what a degree of stretching and displacement it is susceptible of without affecting the acuity of vision or causing any disturbance in the fields. The characteristic chromophobe struma originating in the gland itself may distend the sella to the point of absorp-

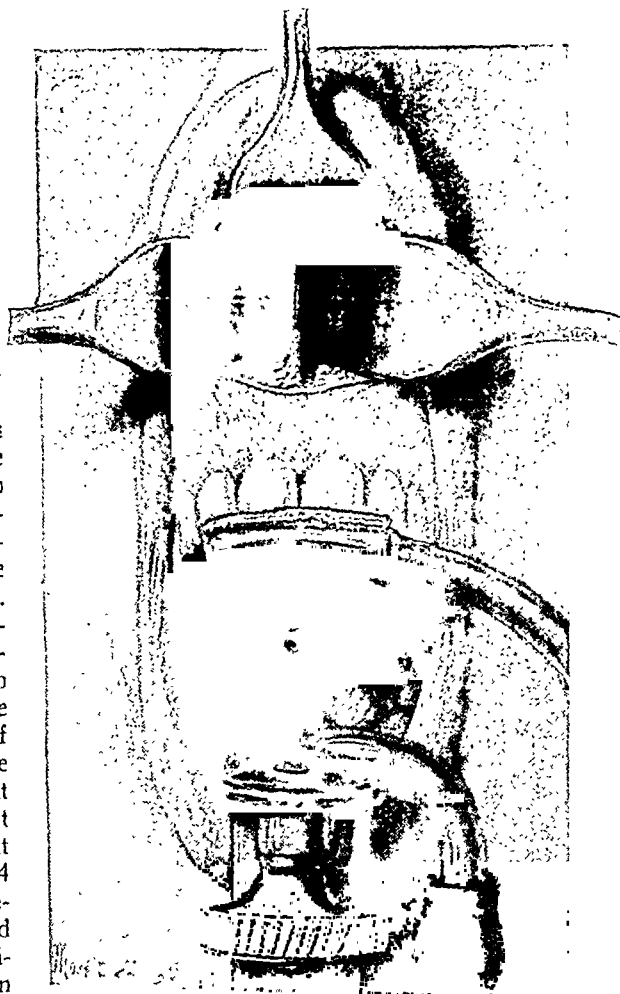


Fig. 5.—Anterior view of Figure 4 with primary lateral retractors in place before removal of septum.

tion of its walls and stretch the glandular capsule until it gives way, permitting the enlarged gland to grow upward into the cranial chamber. Such an intracranial extension may occur to one side of or behind the chiasmal cross-roads, so that eventually either a homonymous or a bilateral defect in the fields of vision may be made out; but manifestations of pressure against the uncus, or against the crura, or even the frontal lobe, may give evidence of extensive intracranial invasion long before there are appreciable signs of chiasmal distortion.

Nevertheless, of all the local symptoms, evidences of pressure on the chiasm are of course the most characteristic and definite. Special studies of these chiasmal disturbances have been made with my co-worker Clifford B. Walker, and will be submitted elsewhere. It will suffice to say here that in the majority of the cases in which perimetric changes have been present, the defects in the fields of vision occurred in the upper quadrants, whether bitemporally or homonymously, indicating pressure against the chiasm from below. We have seen fit to speak of these field defects as grades or stages of hemianopsia, for true half vision, particularly when it affects both eyes symmetrically, is not only comparatively rare, but shows a seriously advanced stage of the process. In the earliest stage, which unhappily is not often recognized, there is merely a slanting off of the form field possibly in one eye alone, with a more or less definite quadrantal loss for colors and often a relative paracentral scotoma—to which de Schweinitz in an excellent paper on the subject has called attention. From the early defect of this Stage 1 the process advances in characteristic fashion through what we call Stage 4 of typical hemianopsia to Stage 8 in which blindness ensues. Moreover, on relief from pressure the process retraces its steps, occasionally with great rapidity—a matter of days oftentimes—until the fields are again normal, or as near normal as the stage of the advance will have permitted.

We have had an unusual opportunity to observe all variations of advance and recession in the field defects and have concerned ourselves particularly with the early stages in patients with pituitary disease in whom evidence of chiasmal involvement has just begun to appear. There are, of course, bizarre forms of field defects—defects which begin at the lower quadrants, or as concentrically enlarging central scotomas, but these are rather more characteristic of the various superimposed lesions in which the visual cross-roads are more or less irregularly enveloped by the lesion. In the larger number of cases the condition progresses in the way which has been briefly described.

I need make no apology for this digression concerning the visual disturbances inasmuch as it is for their relief that operation is chiefly indicated, and a consecutive study of the field defects gives the best possible

index, in the average case, of the efficacy of the procedure. Rarely in surgery do we have such a clearly measurable standard of the benefits of an operation.

Sellar Deformations.—Inasmuch as the surgical procedure best adapted for the relief of neighborhood symptoms hinges largely upon the radiographic disturbances of the pituitary fossa, it may not be out of place to comment briefly upon the several types of sellar distortion, though this is a special subject in itself. For our present purposes we need consider only three varieties: (1) the undeveloped sella; (2) the sella affected by superimposed pressure; (3) the sella distended by a primary glandular struma.

1. Abnormally small sellas or sellas with fused clinoids are frequently seen in cases of primary hypopituitarism without neighborhood symptoms. Not infrequently there is a coincident failure of full development of the sphenoidal cells, and the fossa may be perched on a comparatively solid sphenoidal base.

2. Sellas of approximately normal size but in a more or less abnormal position and with more or less irregular outlines often occur in conjunction with a superimposed tumor. Under these circumstances the diagnosis must usually hinge alone upon the neighborhood and constitutional symptoms, though occasionally, and particularly in tumors arising from a congenital anlage, calcareous depositions in the lesions may cast a radiographic shadow.

Three examples of this occurring in my series have been recorded by Dr. Alfred Luger.⁹

3. The sellar enlargement accompanying glandular tumefaction is of two main types: (a) that occurring in simple acromegaly, in which bony thickening of the walls accompanies the distention, and (b) that in which progressive enlargement with thinning of the walls so deepens the fossa that it bulges

into the sphenoidal cells and the thinned dorsum, if it persists at all, is represented merely by a scale of bone, showing as a thin line on the negative. Still even the thick walled fossa of acromegaly may undergo a similar degree of pressure atrophy in those cases in which there is an extreme enlargement of the gland.

These then are the main forms, though many deviations are met with, varying all the way from complete absence of any trace of the fossa except the anterior clinoid processes, to grades of flattening, of irregular bony thickening and so on, which require special interpretation. This may be difficult in the cases in which the pressure of a superimposed lesion has greatly deformed and flattened the fossa; and particular caution must be observed lest the sellar enlargement, due to distention of the third ventricle in conditions of internal hydrocephalus produced by a subtentorial tumor, be mistaken for a primary pituitary enlargement. This error is the more likely to occur in view of

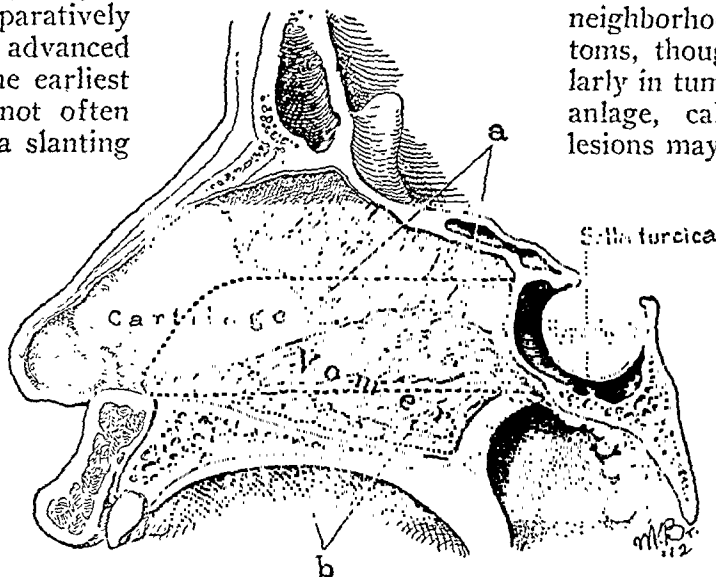


Fig. 6.—Diagram to show approximately the amount of septum removed, a being the necessary pathway, b being removed in addition, to insure orientation by keeping close to nasal floor. (Cartilage removed with Ballenger knife.)

9. Luger, Alfred: Zur Kenntniss der im Röntgenbild sichtbaren Hirntumoren mit besonderer Berücksichtigung der Hypophysengangsgeschwülste, Fortschr. a. d. Geb. d. Röntgenstrahlen, 1914, xxi, 605.

the signs of secondary hypopituitarism which often accompany hydrocephalus. Several cases of this kind have been referred to us with the diagnosis of primary pituitary disease; and needless to say, the performance, under this diagnostic error, of a transphenoidal operation with opening of the third ventricle would be disastrous.

For our present purposes the first form need not be further discussed. Examples of hypopituitarism with a small sella and no neighborhood signs are cases for glandular and not surgical therapy. From an operative standpoint we need consider only the second and third types when they occur in conjunction with neighborhood symptoms.

Operative Procedures for Suprasellar

Tumors.—The chief difficulty arises when pronounced tumor symptoms, and possibly pronounced glandular symptoms as well, are associated with a sella of fairly normal configuration. How can the lesion be approached in these cases? Certainly not from below unless for the purpose of sellar decompression alone in the hope of improving the secretory capabilities of a flattened or compressed gland. In regard to this, however, I do not feel particularly hopeful, though a few remarkable examples of improvement from such a measure occurred in my earlier series. Obviously, if the lesion itself is to be attacked, some intracranial procedure is necessary, and two routes have been advocated: a lateral subtemporal route, practiced by Horsley and used by us in our canine experiments, and a frontal approach, first proposed by Hartley, Krause and McArthur and of late strongly advocated by Frazier and Elsberg.

My own experiences have not been particularly happy with either of these measures. Subtemporal explorations have been made in eight instances. Great difficulty has been met with owing to tension, and only twice have I ventured to expose the dural margin of the fossa sufficiently well to justify fragmentary removal of the lesion. Unjustifiable laceration of the temporal lobe would have been produced had a more radical exposure been made. Such relief as these

patients experienced was attributed to the cranial decompression, and consequently in the later series recourse has been had to this palliative measure alone for the larger number of these cases with an interpeduncular tumor.

My experience with frontal operations, likewise small, has been limited to five patients. Two of them exhibited a typical Frölich's syndrome and in both a complicating hydrocephalus from blockage of the foramina of Monro had occurred, so that some operative intervention seemed imperative. A subtemporal decompression had been performed in one patient two years and in the other six months before the frontal operation. In both vision was rapidly failing.

In each case a freely movable tumor was easily exposed, but its manipulation led to bleeding. In one of the patients at a second session some days later the growth was removed in its entirety, but with such extreme local damage that the unfortunate child's death twelve hours later was a blessing. In the second case the outcome would have been the same had I ventured to attempt a removal. Both of these growths were hard, calcified lesions, the one which was removed bringing with it a large cholesterol cyst the size of a golf-ball. Neither was capable of removal or partial removal piecemeal.

The three other cases were hardly more encouraging. All were adult patients with practically normal sellas but with nearly

total blindness from primary optic atrophy. In two of them suprasellar cysts were found and evacuated—the condition supposedly most favorable for this type of operation. In one case vision had returned in each eye on the afternoon of the operation, but faded again after three or four days: the operation was repeated and an attempt made to permanently drain the cyst, with again a return of vision which failed after several days; on a third attempt the cyst was punctured by a "Balkenstich" and there was a slight return of vision after some days, which, however, was not permanent. In the two other cases the condition remained unchanged.

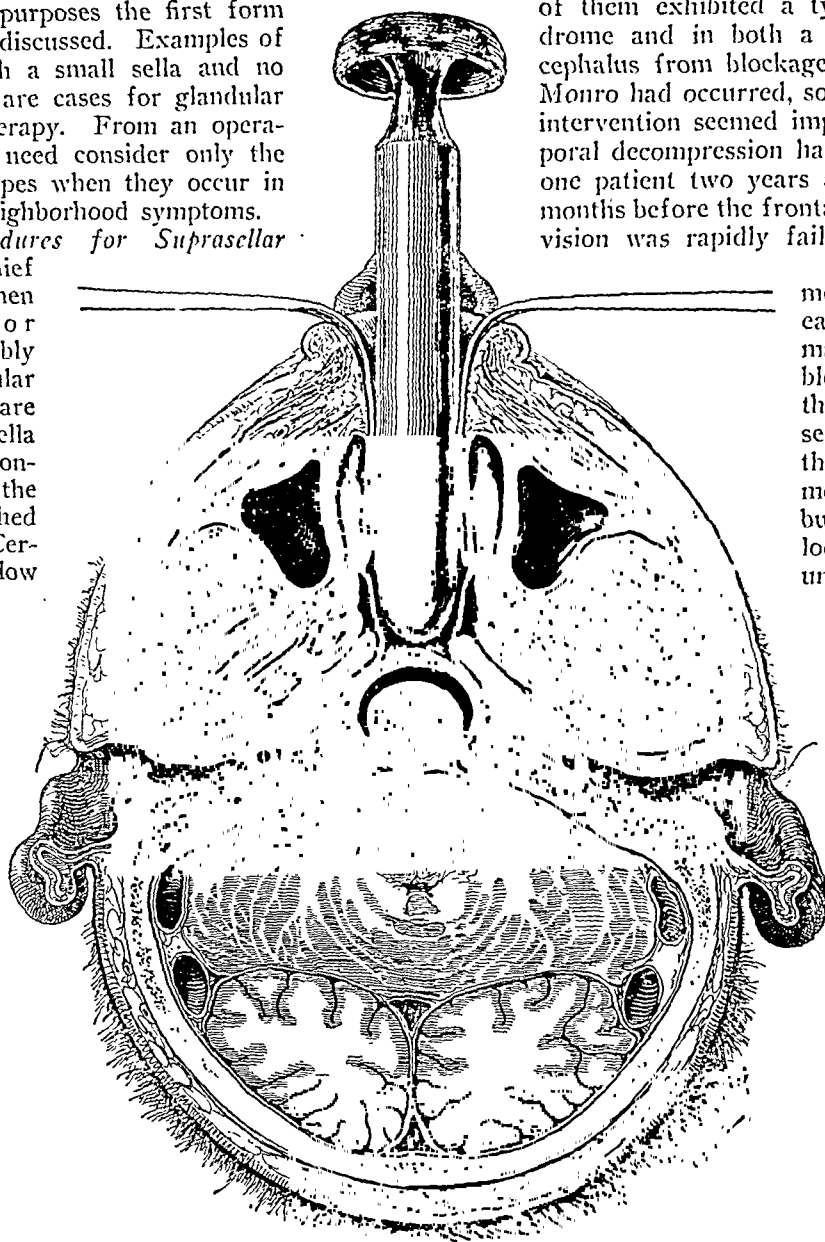


Fig. 7.—Horizontal section to show introduction between the retractors of one of a series of dilating plugs which serve to flatten the turbinates.

It is fair to say that this experience while discouraging is slight, and I shall further pursue the matter as favorable circumstances arise, but certainly the cases for which a frontal operation is indicated cannot compare, either in number or on the ground of risk or of promised improvement, with those to be discussed under the following heading in which a transphenoidal operation is suitable. It is conceivable that our diagnostic facility may so improve that we shall be able to

indicate, will not always serve to give permanent results even in the case of a simple cyst.

Operative Procedures for Tumefactions Which Distend the Sellar Fossa.—The surgical story is here far more encouraging. In the analysis of 148 cases given above it was stated that neighborhood (usually chiasmal) symptoms accompanied by a greatly distended sella turcica were present in 20 of the acromegalics and in 29 of the patients with apparent primary hypopitui-

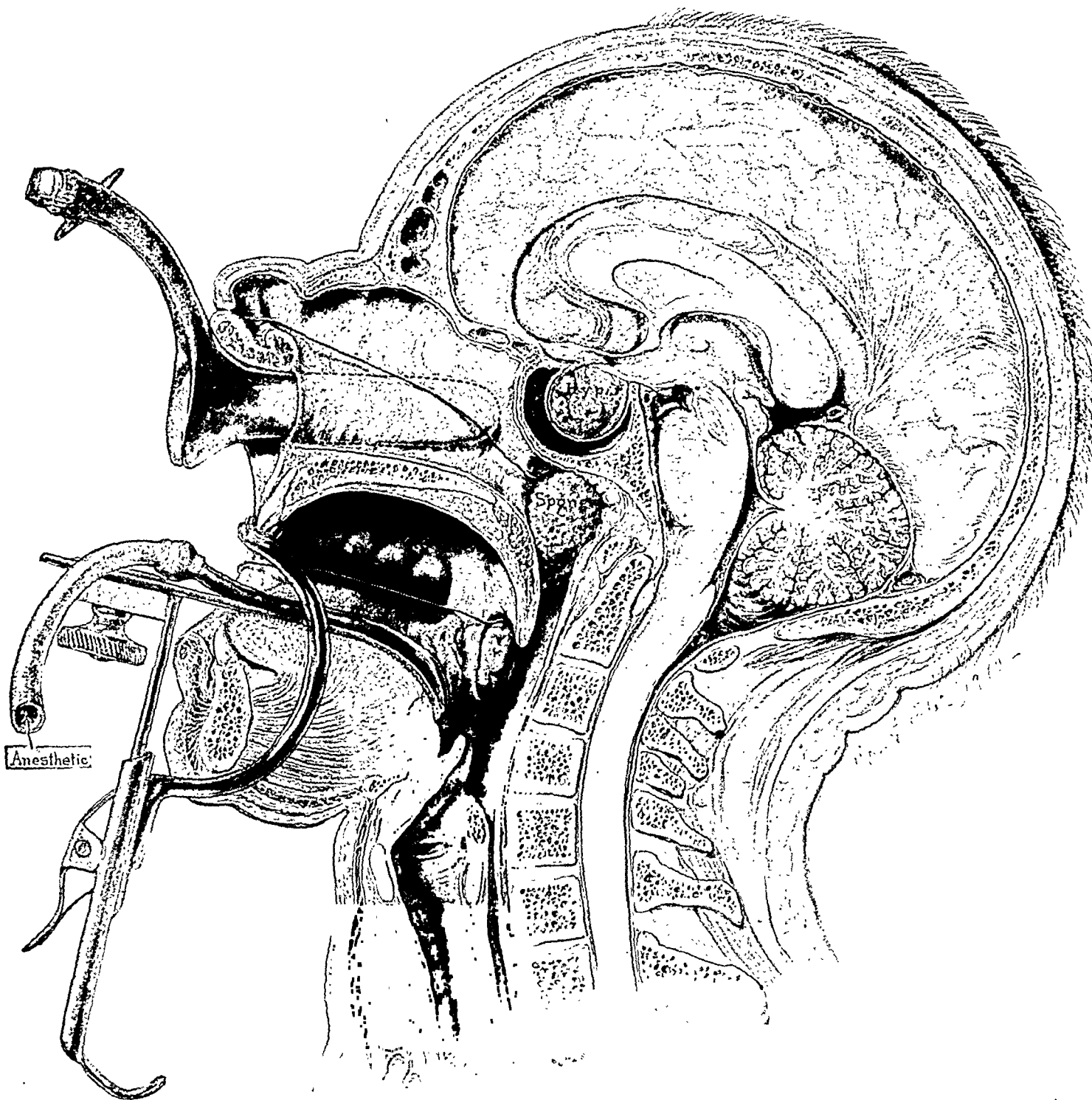


Fig. 8.—Sagittal section to show position of structures and substitution for the two lateral retractors of a self-retaining bivalve speculum through which the further manipulations are conducted.

recognize the presence of a suprasellar lesion before it has enlarged to any considerable extent; also that we may be able to foretell the presence of a cystic growth suitable for operative evacuation by this route; but judging from the post-mortem study of a number of these cases, few if any of them could have been benefited by a partial removal of the growth and its total removal would have been out of the question. Mere drainage, as the experience recounted above would

tarism. Thus 49 cases in the series were clearly suitable for the transphenoidal procedure and almost without exception the 43 cases of the type which were subjected to operation have been greatly benefited. Some 25 other cases have been similarly treated, with less definite or with no improvement and, as the final statistics will show, with some fatalities.

The performance itself has been much simplified since the original transphenoidal operation which

Schloffer boldly originated. The procedure which I have come to employ is merely a composite of such modifications of the Schloffer operation, suggested by Kanavel, Halstead, Hirsch and others, as are adapted to my own requirements. It therefore makes no claim for originality.¹⁰

Few words in description of the operation are needed to supplement Mr. Max Brödel's drawings which are here reproduced, for, as is true of all his superb medical illustrations, they serve to make the context superfluous. The sketches, however, were made two years ago, before my departure from Baltimore, and since then the operation has undergone some further simplification. At that time much reliance was placed upon the Sewell mouth-gag and tongue depressor, which with its leverage upon the upper teeth is admirably suited to hold the tongue forward—an important matter when, as in cases of acromegaly, there is considerable lingual hypertrophy. My anesthetist at that time, Dr. S. Griffith Davis, modified the apparatus by soldering a tube to the upper surface of the tongue depressor, so that the ether vapor could be conducted directly to the glottis, which the tongue depressor effectively holds open. Moreover, in the earlier operations tears were often made in the mucous membrane, with some leakage of blood into the pharynx, and to avoid this it was customary to occlude the posterior nares with a sea sponge, as shown in the drawings. Latterly, however, we have made use of Meltzer's intratracheal method, and with greater experience in conducting the submucous resection tears in the mucous membrane are usually avoided and we no longer need to occlude the posterior nares.

The operation combines all the advantages of the endonasal procedure of Hirsch, and for one who does not possess the practiced hand of the rhinologist it has the further advantage of affording almost double the room that an operation through one nostril permits. Furthermore, it possesses the advantage of a midline procedure, which affords almost as much operative space as was given in the earlier mutilating operations in which septum and turbinates were removed; for with the introduction of the dilating plugs the lower turbinates are temporarily flattened. By this method there is a complete avoidance of the postoperative ozena which, as von Eiselsberg points out, is one of the disagreeable consequences of exenteration of these structures.

When working at a depth in an operation of this kind the field must be absolutely dry, as identification of the structures at every bite of the rongeurs is essential. In the simple cases removal of the anterior wall of the sphenoidal cells exposes the bulging struma, which is often covered merely by mucous membrane and distended dural capsule, with possibly a few scales of the thinned sellar base between them. On slitting the coverings the soft struma extrudes from the incision and as much of the tissue as judgment permits is scooped out of the base of the sella by a blunt spoon.

There are many helpful surgical devices, many precautions to be taken, many abnormalities which must be recognized, the discussion of which would lead too far at this time. One precaution alone may be mentioned, and this concerns the cases in which a superimposed tumor has distended and obliterated the sella, giving the radioscopic appearance of a primary sellar enlargement. Under these circumstances, on slitting the distended dura resistant tissue instead of the soft struma is exposed, and inasmuch as a flattened pituitary gland may be interposed between operator and tumor, it is well to remove a small snip of tissue for microscopic purposes and to postpone further progress by this route, if any is justifiable, for a subsequent session.

In the average case, however, there is no difficulty of interpretation; and after the extirpation of such of the

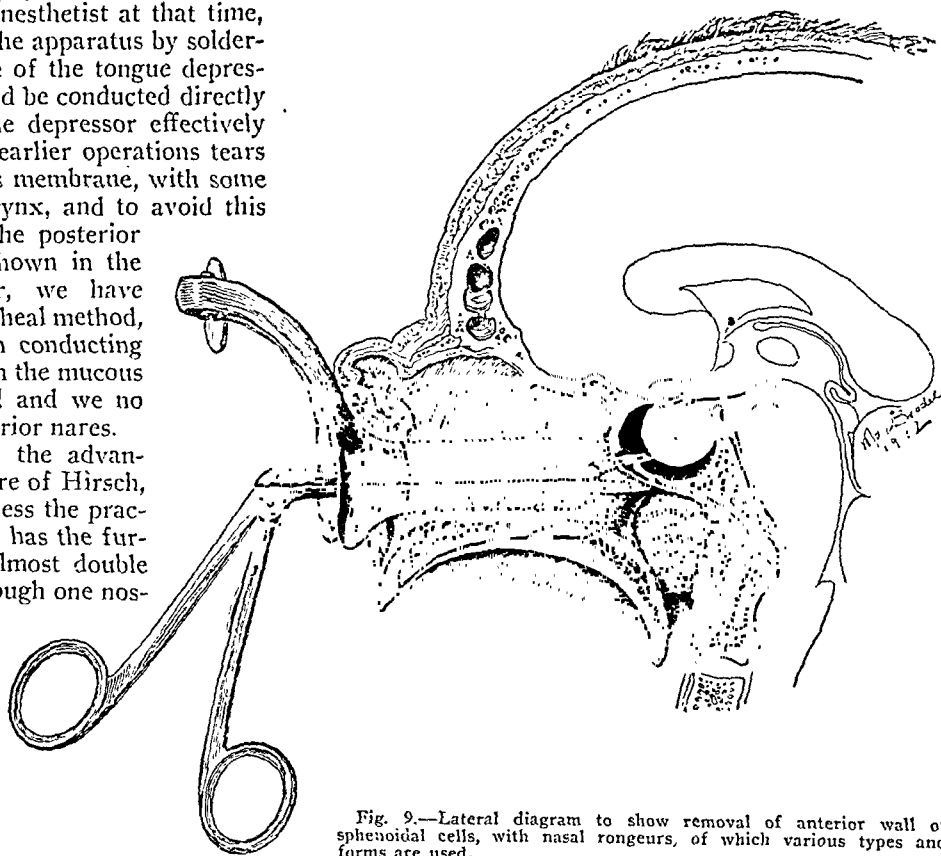


Fig. 9.—Lateral diagram to show removal of anterior wall of sphenoidal cells, with nasal rongeurs, of which various types and forms are used.

struma as seems wise the bivalve speculum which holds apart the intact mucous membrane linings of the septum is removed, a cigaret of gauze covered by petrolatumed protective is placed in each nostril, to hold the submucosal surfaces of the septum in approximation, and the sublabial incision is closed with two or three catgut sutures. As no drainage from the sphenoidal cells is used the raw gland must be left completely dry before withdrawal from the deep field. The cigaret plugs are removed after a few hours, and in many cases there is no subsequent discharge and it would be impossible to gather from a nasal examination that an operation had been performed. The patients are usually able to leave the hospital in a week or ten days.

The criterion of success, however, is not the getting in and out without risk or without a tell-tale of the operation, but the betterment of vision. Improvement is apt to be so abrupt in favorable cases in which the

10. A written comment on the operation may be found in "The Pituitary Body and Its Disorders," J. B. Lippincott Company, 1912, p. 297, et seq.

temporal defect has not advanced beyond the stage of a midhemianopsia that patients are often aware of an increased acuity on recovering from the anesthetic. Even in cases of more advanced visual impairment improvement may follow, and in not a few cases vision has been regained in previously blind eyes, demonstrating, as I have elsewhere emphasized, that so-called primary optic atrophy with blindness need not represent a complete anatomic destruction of the nerve but rather a physiologic block to the transmission of light.

OPERATIVE STATISTICS

As already stated, in the series of 148 patients with evidences of a hypophysial derangement manifestations of tumor were present in 101 cases. In 95 of these cases surgical measures were undertaken. In a number of patients in the earlier series operations were attempted which experience has shown to have been unwise, and possibly these are offset by the number of favorable cases in the series that have refused operation. Hence it may be roughly estimated that about two-thirds of the individuals with outspoken pituitary disease suffer from defects of vision or from pressure discomforts capable of some measure of surgical relief.

The various types of operation, from the side, from in front, and from below, with their purpose, may be indicated as follows:

1. A *subtemporal decompression* for the sole purpose of relieving general pressure symptoms in case of a primary suprasellar tumor or of a growth arising from the gland itself which has extended into the cranial chamber.

2. A *lateral exploration of the interpeduncular region* with an osteoplastic resection, according to Horsley's method of approach under the temporal lobe.

3. A *fronto-orbital exploration*, after the method of McArthur, Frazier and others, to expose a suprasellar tumor, an operation which in the case of an irremovable lesion cannot be transformed into a decompression owing to its situation.

4. A *transphenoidal operation*, resulting in (a) a simple sellar decompression, or (b) a sellar decompression combined with partial removal of the intrasellar tumor.

In not a few instances, as will be seen, two or more of these performances were carried out on the same patient, so that all told, on the 95 patients subjected to operation, 124 operations were performed.

1. A simple *subtemporal decompression* was carried out on 33 of the 95 patients and in 4 instances both sides were decompressed. There were two fatalities in the early series, both of which have been recorded in my monograph (Cases V and VIII). Of the remaining 31 patients about 20 were relieved of the coexistent general pressure symptoms. In a few instances there was an unexpected improvement in vision: one patient, for example, who was completely blind, with a primary atrophy, regained hemianopic vision in each eye. In

9 cases there was no apparent change subjectively or objectively, but it must be realized that in the greater number we were dealing with large tumors. In the 6 patients who suffered from uncinata attacks the decompression failed to modify this distressing symptom.

2. In 8 cases a *lateral osteoplastic resection combined with a subtemporal decompression* was carried out and an exploration was made below the temporal lobe to the point of exposure of the interpeduncular region, but in only one case was a partial removal of the growth possible. Though there were no fatalities the less difficult and dangerous decompression by itself would have accomplished as much for these individuals.

In 13 patients a subtemporal decompression or exploration was preceded or supplemented by another operation. Thus in 9 instances a transphenoidal operation had been previously or was subsequently carried out, and in 4 a fronto-orbital operation, and consequently for statistical purposes these cases are included in each operative group. All told therefore there were 45 subtemporal procedures, with the 2 operative fatalities which have been mentioned.

3. Our experience with *fronto-orbital operations* has already been related. All but one of the 5 cases had previously been subjected to a subtemporal decompression owing to pressure headaches, with relief in each case. Vision was not greatly impaired at the time of the palliative decompression in any of these cases, and the transfrontal operation was not undertaken until a later period (one year, six months, four months, two months). As recounted, one operative fatality occurred after the removal of a large tumor at a second-stage procedure. Another of the patients was operated on twice; hence there were 6 transfrontal operations, with one death. That they were difficult cases, not susceptible to prompt relief by customary measures, is shown by the fact that in the 5 cases there have been 15 operations, including the subtemporal decompressions, callosal and ventricular punctures, and the direct attacks on the growth itself.

4. Of the *transphenoidal operations* 74 have been performed on 68 patients—twice in 5 cases and in one instance a third time owing to the continued enlargement of the growth with return of chiasmal symptoms and a persistence of

uncinata seizures. As already pointed out, in 9 of these cases a subtemporal decompression was also made.

In 16 cases a simple *sellar decompression* was performed, with slitting of the dura but with no tissue removal. This was purposeful in some instances: in others further progress was checked owing to bleeding from the surface of the tumor: in others it was inadvisable owing to a threatened leakage of cerebrospinal fluid: in still others impossible, for the reason that a flattened pituitary gland lay between the tumor and the operator. In one or two of these cases of simple

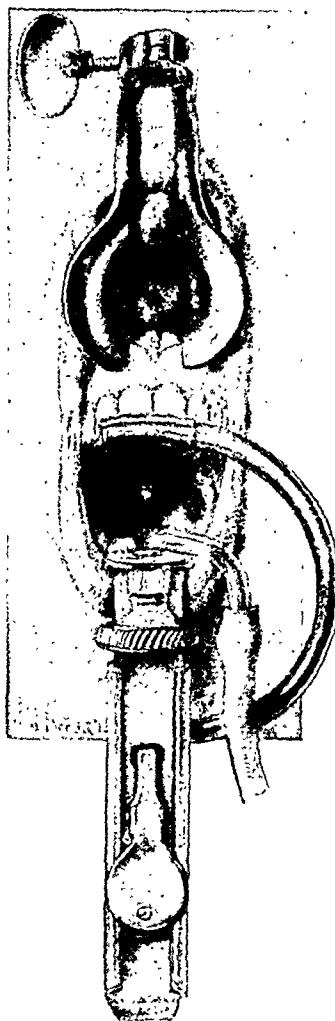


Fig. 10.—View through speculum of operative field after removal of anterior wall of sphenoidal cells and floor of sella; showing primary nick in dural capsule to be enlarged by a knife-hook.

decompression, in lieu of tissue removal, a radium tube has been inserted into the substance of the struma and withdrawn after a few hours.

These cases therefore represent some of the more difficult experiences in some of the earlier operations, and the three deaths from meningitis which occurred in this series all followed misdirected operations in cases of this type with a small sella and superimposed tumor. Another patient recovered after a severe meningitis.

In 52 patients a *sellar decompression combined with extirpation* of tissue or evacuation of a cyst has been carried out 58 times. In these 58 operations there have been 4 operative fatalities: 1 after a primary partial removal of a sellar struma in the case of an acromegalic who had a large intracranial extension of the growth which was unsuspected but which should have been recognized; 2 others after a second attempt to partially remove a large suprasellar tumor from below; and the fourth after a third transphenoidal operation as related. The post-mortem examination in all four of these cases showed that operative relief by the route chosen was utterly impossible and that they were cases suited only for a subtemporal decompression. Thus in the 74 operations in this transphenoidal group there have been 7 fatalities (9.5 per cent.), all but one of them occurring in the earlier series.

The results of the transphenoidal operation, which, as has been made clear, is carried out chiefly for the relief of chiasmal involvement, have been most gratifying in the 61 survivors in the 68 cases. Progressively failing vision has become stationary or has been slightly regained over periods varying from a few months to several years in 22 cases. There has been a prompt widening of the fields with marked improvement of vision, often with return to the normal, in another 22 cases. In 2 patients vision was temporarily made worse as a result of the operation, but there was subsequent great improvement. Though vision had been completely lost in 5 cases before the operation, in 2 of the cases it was partially regained. In 8 cases it was unaffected before the operation, and still remains so. In only 3 cases was there a progressive failure of vision despite a successful operation and in all of them the tissues removed showed a malignant transformation of the lesion to which the patients have since succumbed.

The entire operative series for the 95 patients may be tabulated as herewith, 19 of them having been subjected to a decompressive craniectomy in addition to the direct attack on the tumor.

TABULATION OF OPERATIVE SERIES

	Cases	Operations	Fatalities
Subtemporal decompressions	33	37	2
Subtemporal explorations	8	8	0
Subfrontal explorations	5	6	1
Transphenoidal decompressions ...	16	16	3
Transphenoidal extirpations	52	58	4
	114	125	10

Thus there was a total operative mortality of 8 per cent. and a case mortality of 10.5 per cent. Moreover, in the 74 operations in the two transphenoidal groups there have been 7 fatalities (9.5 per cent.), most of them occurring in the earlier series.

Thus in these 95 patients there have been 125 operations, with 10 fatalities—8 in my earlier Baltimore series of 74 operations (10.8 per cent.), 2 in my subsequent Boston series of 50 operations (4 per cent.), showing a lowering of the mortality with a wider experience.

That these mortality figures can be further improved with increased familiarity in the proper selection of cases and with perfected operative methods is evidenced by the fact that in the last 33 transphenoidal operations there has been only one death, this having occurred in the case of the patient in whom, as recorded, a third operation was unwisely undertaken.

Statistics are dreary matters but it is periodically incumbent upon us to assemble our cases not only for our own instruction lest we bury in obscurity our mistaken and bad results, but also to acquaint others with the standing of operative measures.

We have become confronted of late years with new surgical problems relating to a group of patients with disorders which were unrecognized by our forebears, and hesitating as our steps may be in meeting these problems our operative experiences must from time to time be recorded in all their lights and shadows.

The Peter Bent Brigham Hospital.

TWO NEW METHODS OF CLOSURE OF THE PYLORUS FOR PYLORIC AND DUODENAL ULCER*

ALFRED A. STRAUSS, M.D.

CHICAGO

Closure of the pylorus for pyloric and duodenal ulcer has been recognized more and more in recent years as of the greatest importance in the cure of pyloric and duodenal ulcer. Prominent among the investigators and surgeons who have demonstrated various methods are Kelling, who, in 1900, used a silk ligature, and Parlavacchio, who, in 1910, used a ligature of cotton and wool, which was tied around the pylorus only tight enough to bring the mucous membrane into apposition. This was insufficient in both man and animals, the ligature cutting through, leaving the lumen of the pylorus the same as before operation. In addition, patients operated on by this method suffered severe gastric pain. Bier modified this method by crushing the portion of the stomach where the ligature was placed. He claimed that these patients have no pain. Closure is not complete, but adequate clinically. In 1913, at the German Surgical Congress, he stated that he is dissatisfied with all methods of closure, and now has returned to the use of the simple ligature, by simply infolding the ulcer with sutures, after the method of Moynihan. This is not a complete closure, but it suffices. Mayo and Moynihan used the puckering-string method. The ligature passes only through the muscularis, in order to infold the mucosa. Both here and in England good results have been obtained by this method. Küttner and Körte have both had success and failure, and in animals no lasting stenosis is accomplished.

Körte used puckering sutures both on the anterior and posterior walls, whenever possible. If perigastric adhesions are present, then it suffices to place them in the anterior wall only. This does not give a complete closure, as is shown on the cadaver by passing the finger into the stomach after ligatures are applied.

Girard and Doyen performed a pyloroplasty at right angles to the usual direction, which narrows instead of

* Additional illustrations appear in the author's reprints.
From the Department of Experimental Surgery of the Morris Institute of Medical Research of the Michael Reese Hospital.

widening the lumen. They cut down to the mucosa only. Propping reported reported failures by this method.

Bogoljuboff and Wilms used the fascia lata and anterior sheath of the rectus. This method seemed an improvement over all other methods. Wilms had used it in twelve cases at the time of the German Surgical Congress in 1913. The patients had no blood in the

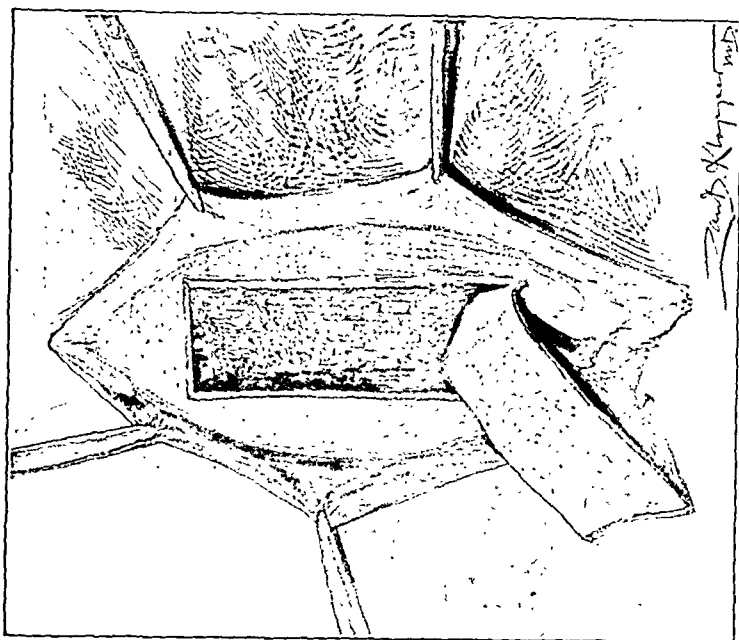


Fig. 1.—First method of pyloric closure. Anterior sheath of rectus exposed and flap resected.

stools and no pains. The Roentgen ray showed closure to be complete, the stomach emptying itself in one hour. In three other cases Wilms used omentum. These were also reported as successful. Siegel, however, reports a complete failure by this method, and after two months no trace of the fascia was demonstrable. Bier reports a case of enormous scar formation and perigastritis by this procedure.

Brewer used an aluminum band 1 cm. in width and 5 cm. in length. This was placed around the pylorus

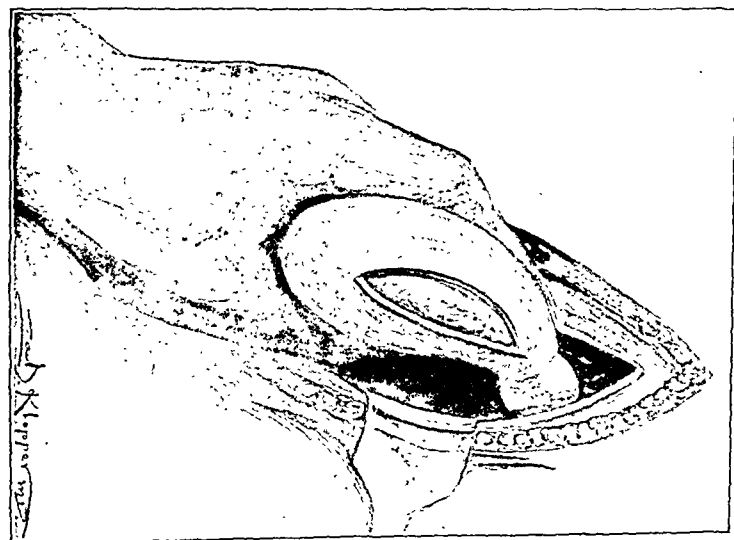


Fig. 2.—Incision in stomach to pyloric sphincter, exposing mucosa.

and rolled snugly with the fingers to produce sufficient compression to obliterate the lumen. He reported experiments on nine animals, the oldest of which was 9 weeks, in which the pylorus was closed.

Bartlett divided the muscular coats and mucosa by means of a metal skewer. This is thrust directly through both walls of the stomach into the lesser peri-

toneal cavity, and out again. A clamp is placed behind the skewer and several mattress sutures introduced between skewer and clamp. This embraces the whole thickness of both walls of the stomach. The skewer is cut out with a sharp knife and the mattress sutures tied. A hemostatic running stitch of silk or linen unites the four exposed cut edges. The ridge of tissue formed by the mattress sutures is inverted with a continuous Lembert row.

Von Eiselsberg's unilateral exclusion of the pylorus is the most exact method. It would be recommended in all cases were it not a relatively long operation, producing a great deal of shock. The exclusion is a larger operation than the gastro-enterostomy itself, and almost impossible to perform when dense adhesions are present. Henle, who otherwise recommends it, lost 16.65 per cent. with exclusion, versus 6 per cent. with gastro-enterostomy alone. A fair number of cases of fatal hemorrhage have been reported following this operation.

While I was carrying on my work, Biondi published, in October, 1913, a method of pyloric closure. The first step, which is shelling out the membrane, is prac-

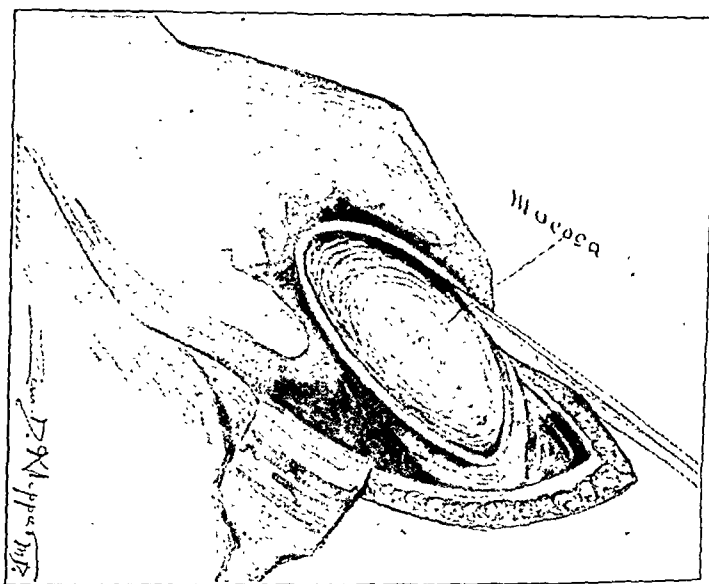


Fig. 3.—Method of freeing mucosa.

tically the same as one of the methods to be described here, but the second step, producing closure, is entirely different, both in method and in principle. He divides the shelled-out membrane, making a closed cuff at each end with sulk sutures.

It will be noticed from the foregoing that the methods can be divided into two great classes: First, those which attempt to close the pylorus by bringing the mucosa into apposition with ligature, puckering string, fascia and metal band. Second, those which divide the mucosa alone or mucosa and muscularis. The ligature method is bound to fail at all times, because no ligature can be buried, especially near the pylorus, where the peristaltic waves are most powerful. The ligature produces an anemic necrosis, and sloughs inward toward the lumen of the bowel. I believe there are two important factors which explain this. First, the force of the action of the peristaltic wave of the stomach is toward the central portion of its lumen; consequently any ligature or object which produces an anemic necrosis will be forced inward. The intra-abdominal pressure possibly is a factor. We know that in the normal collapsed stomach intra-abdominal

pressure far exceeds the pressure within the gastric cavity. This gives additional force to bodies in the wall of the stomach, causing them to be forced in the direction of least resistance, namely, its lumen.

Placing fascia around the muscularis of the pylorus has the disadvantage of having to overcome the powerful peristaltic contractions, the occurrence of adhesions and the possibility of absorption.

The second class, which divides the mucous membrane or mucous membrane and muscularis, has a fair amount of success. The ligatures which close the mucosa slough inward, as is well known in gastro-enterostomy. If this occurs at both divided ends at the same time, it leaves a communication. It is also a well-established fact that all physiologic tubes—stomach, bowel, ureter, common bile duct—if given the slightest chance, have an inherent tendency to reestablish their mucous lining and lumen.

Taking advantage of the above facts, that the mucous membrane of the stomach, when divided, has a tendency to reestablish its lumen, and that ligatures are always forced toward the lumen of the bowel, I tried to keep this work within the limits of the fol-

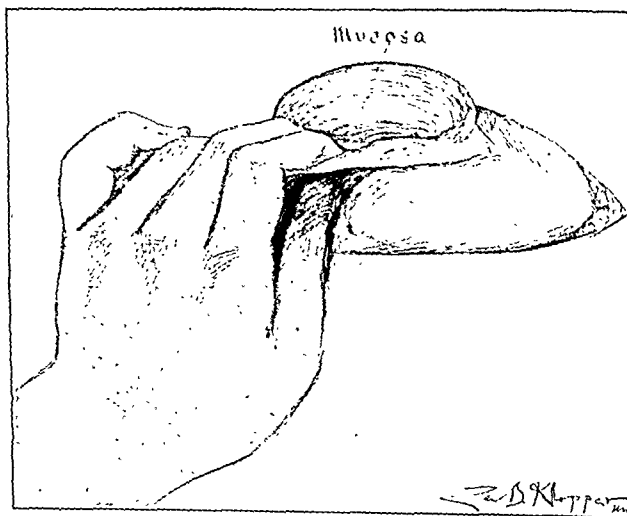


Fig. 4.—Muscularis everted, mucosa lying on its surface.

lowing principles: First, the closure must be accomplished without division of the mucous membrane, but rather a closure produced by connective tissue contractions, such as one finds in the stricture of the bowel and hour-glass stomach. Second, the operation should be a simple one, which can be done in a short time, so as not to add too much additional shock to the necessary operation of gastro-enterostomy.

AUTHOR'S FIRST METHOD

With the above facts in mind the following surgical procedure was carried out:

A right rectus incision was made $\frac{1}{2}$ inch to the right of the midline, extending from the angle of the ribs down to the umbilicus. The anterior sheath of the rectus was exposed and a flap resected, $\frac{3}{4}$ by $1\frac{1}{2}$ inches (Fig. 1). In resecting this a thin, adherent layer of muscle fibers from the rectus muscle was taken with it. The stomach was next brought into view. The pyloric portion was then tightly grasped between the thumb and index finger. An incision was then made proximal to the pyloric sphincter on the upper outer surface $1\frac{1}{2}$ inches in length (Fig. 2). This exposed the mucosa. Two strokes with the scalpel on each side, between

the mucosa and muscularis, freed the mucosa sufficiently (Fig. 3), so that the thumb could be placed under the pylorus and, grasping the edge of the muscularis, the entire muscularis could be everted (Fig. 4), so that the mucosa lay on the everted muscularis like a rubber tube. This step is the most important one. Without eversion it is next to impossible to separate the mucosa from the muscularis without

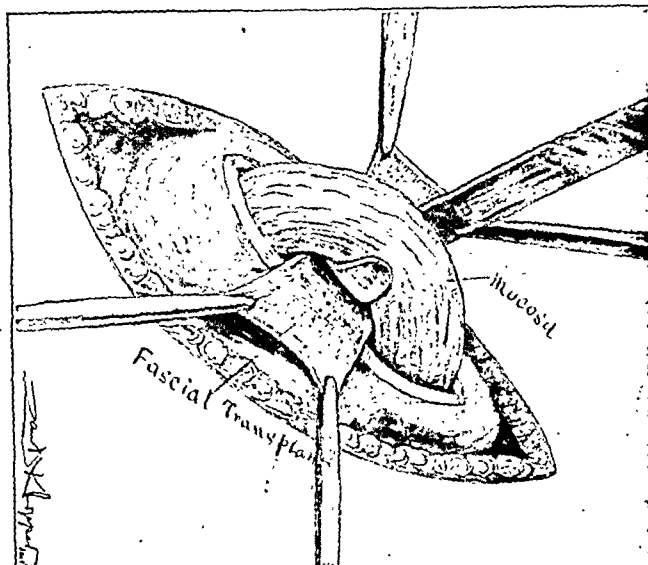


Fig. 5.—Free fascial transplant from rectus placed around mucosa.

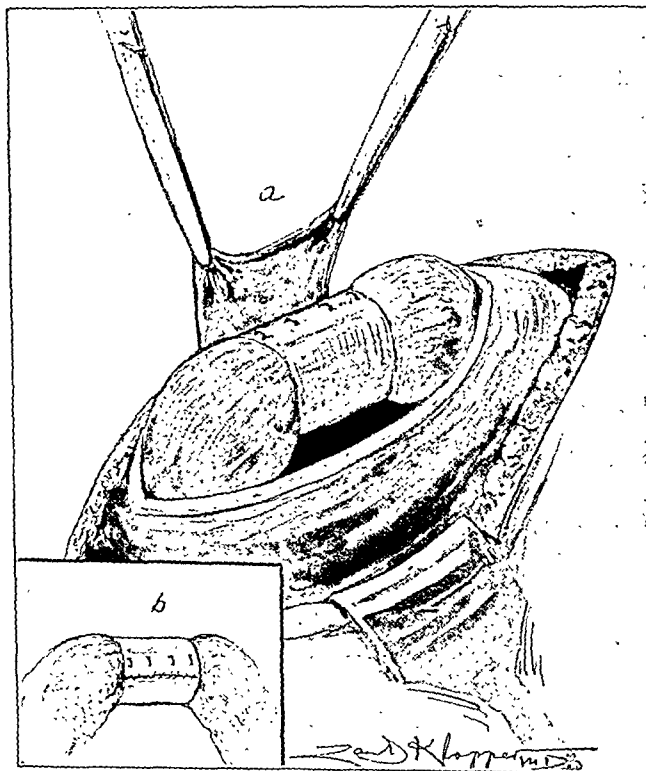


Fig. 6.—a, End of transplant sutured to mucosa and traction being made to cause collapse of mucosa; b, final suturing of end of transplant. Note double suturing.

tearing it. It can now be easily separated with a sharp scalpel. There is only a small amount of oozing of blood.

The free fascial transplant of the rectus was placed around the mucosa (Fig. 5). One end of this transplant was sutured with four interrupted sutures to the mucosa (Fig. 6, a); on the other end traction was made, which collapses the mucosa and rotates it about one-eighth of a turn on its longitudinal

axis. This aids in making it a complete closure. The end of the transplant was sutured with four interrupted sutures to the surface of the attached portion, just tightly enough to hold it in a collapsed condition, and a third continuous suture holding down the edge (Fig. 6, a).

The mucosa was now replaced in its normal position within the muscularis and was closed by continuous interlocking sutures, as in Figure 7, two of the sutures catching the fibrous band so that it cannot slide forward and backward on the inner surface of the muscularis.

I have performed this closure at the junction of the fundus of the stomach with the antrum pylori as well as near the sphincter pylori, in order to show that ulcers in the antrum pylori as well as duodenal ulcers could be shut off by this method. The suture material used was No. 2 braided waxed silk. The procedure takes fifteen minutes—five minutes for shelling out the mucosa, five for placing on the transplant and three to five for closing the musculature. In seven cases the anterior sheath of the rectus was used; in five cases the transversalis fascia, muscle and peritoneum and in four cases fascia lata.

The gastro-enterostomy was performed in the usual manner, with the exception that the anastomosis was placed on the posterior wall as near the closed pylorus as possible. It seems when the anastomosis is made at the most dependent portion of the greater curvature, on the posterior wall, the stomach empties quickly up to the point of anastomosis and then leaves a residue of food between the pylorus and the anastomosis for hours.

In August, 1913, I first started on this procedure, but, owing to an epidemic of distemper, almost all dogs operated on died within a few days following the operation. After the epidemic subsided, sixteen dogs were operated on by the above procedure, and practically all of them made uneventful recoveries. None of the dogs vomited following the operation, and all were placed on a full diet within six days. They all appeared in perfect health and many of them gained in weight. At the end of two months the first animal was roentgenographed and fluoroscoped and then killed. The roentgenogram showed the pylorus absolutely closed and the gastro-enterostomy working. In this dog the closure was performed at the

junction of the antrum pylori and fundus of stomach. Necropsy showed the stomach and pylorus perfectly free. On examining the pylorus one would not know that the operation had been performed on it. The stomach was removed, the gastro-enterostomy clamped off, and the esophageal end of the stomach attached to a hydrant. Under enormous hydrostatic pressure not a drop of water could be forced through the pylorus. The pylorus was sectioned and the water test again performed, with the same result. The cross-section of the closed pylorus

(Fig. 8) showed the mucosa firmly collapsed. Around it, the free transplant could be distinctly seen attached to the mucosa on one side, and on the other side to the muscularis. The muscularis appeared perfectly normal.

Histology.—Complete cross-section (Fig. 9) of the pylorus shows the mucosa normal and collapsed, with no sign of pressure atrophy in any portion of it. Around it is seen the fascial transplant perfectly organized and containing many small blood-vessels attached to the mucosa. The striated muscle fibers from the rectus also appear normal, still retaining their nuclei. The muscularis is attached to the fibrous transplant, and shows no changes.

In Figure 10 is shown a section of the fibrous band under high power. The glands of the mucosa appear normal. The fascia is intimately connected to the latter. In it are many blood-vessels and nuclei. The muscle fibers of the rectus sheath also appear to be normal.

At the end of four months six animals were killed. The changes were the same as noted above. All of them showed an absolutely watertight pylorus. Three of the dogs had a few web-like adhesions from the sutures of the pylorus to the under surface of the liver. At the end of five months four more were killed, with the same findings. At the end of six

months two more were killed, with the same findings. In one of these the closure was made proximal to the sphincter pylorus, and the transplant used was peritoneum, transversalis fascia and transversalis muscle. On cross-section the mucosa is collapsed and around it can be seen the fascial band. The muscularis appears normal. Histologic examination shows, on complete cross-section, that the peritoneum had disappeared and little could be seen of the transversalis muscle, but the white fibers of the transversalis fascia seemed to be perfectly organized, as in the specimen described above.

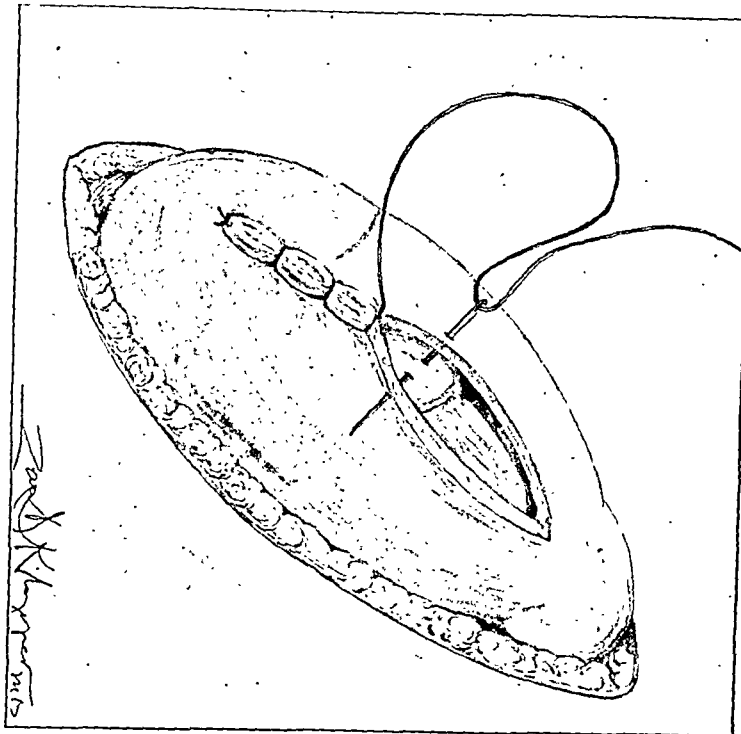


Fig. 7.—Mucosa replaced in normal position and closed by interlocking sutures. Note catching of fibrous band in sutures to prevent slipping.



Fig. 8.—Cross-section of closed antrum of the pylorus. From a photograph. A, mucosa; B, fascial transplant holding mucosa; C, muscularis of pylorus; D, blind fold of mucosa at upper end of closure outside of fascial transplant.

My reason for taking this particular transplant of peritoneum, transversalis fascia and muscle was that my recent work on artificial ureter¹ made from this particular transplant showed a complete metaplasia, the fascia being transformed into a bony plate. No such metaplasia occurred when placed around the

the sphincter pylori. The effect was funnel-shaped, thus preventing the abrupt cutting off of the peristaltic waves. The ribbon sutured in this manner was just tight enough to place the mucosa in apposition. The tissues covering the ribbon contract down on it still tighter, making the closure still more complete. This method is very simple and takes only five minutes.



Fig. 9.—Cross-section of portion of pylorus shown in Fig. 8. From a photomicrograph $\times 5.5$; A, collapsed mucosa; B, fascial transplant around mucosa; C, muscularis; D, blind fold of mucosa.

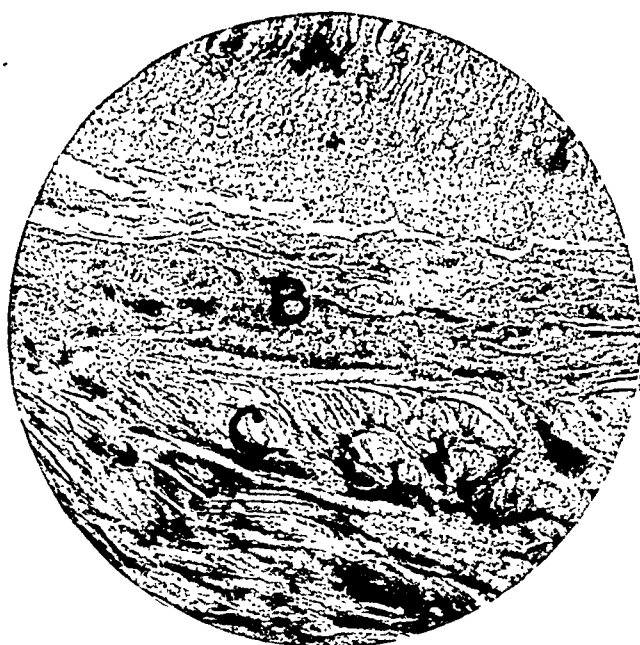


Fig. 10.—Section of portion of pylorus shown in Fig. 8. From a photomicrograph; A, mucosa; B, connective tissue of transplant; C, muscle fibers of transplant.

mucosa of the pylorus, showing that the metaplasia which did occur was due to the chemical constituents of the urine.

AUTHOR'S SECOND METHOD

The second or silk-ribbon method was based on two facts: (1) ordinary ligatures cut through the pyloric musculature, and (2) fascial transplants placed around the pylorus have a tendency to give way under the powerful peristaltic contractions. Furthermore, these transplants become adherent to adhesions or disappear entirely. To overcome these obstacles a piece of ordinary white silk ribbon $\frac{3}{4}$ inch in width was sterilized. A closed Kocher forceps was passed beneath the pylorus through the mesentery. The forceps was next opened to enlarge the mesenteric opening and the ribbon pulled through (Fig. 11, a). One end of the ribbon was sutured with four interrupted sutures to the muscularis, as in Figure 11, b. The other end was sutured to the ribbon with four interrupted sutures, and the edge with continuous sutures (Fig. 11, c). The sutures near the antrum pylori were not placed as tightly as those near

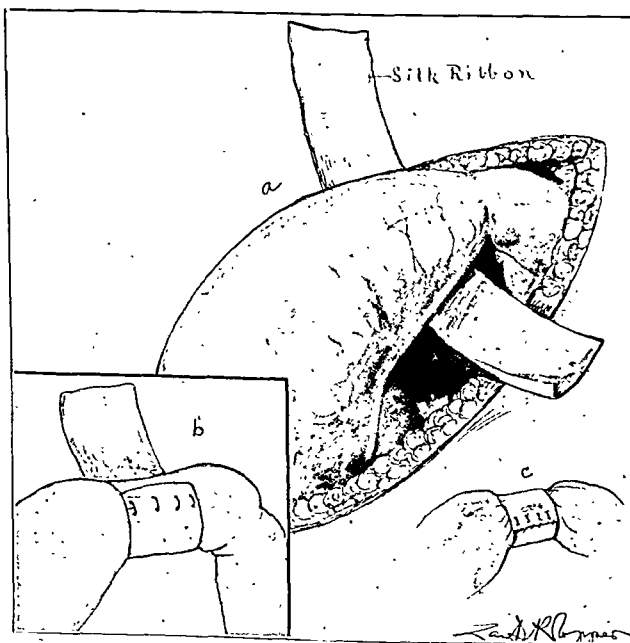


Fig. 11.—Silk ribbon method; a, ribbon pulled through mesenteric opening; b, end of ribbon sutured to muscularis; c, final suturing of ribbon.

Twelve dogs were operated by the above method. One animal tore open its abdomen at the end of one week. Another died of peritonitis, the cause of which could not be ascertained. The other ten made uneventful recoveries. At the end of five days one dog was killed. The tissues from the lesser omentum had covered the ribbon completely, as in Figure 12. At the end of four weeks one dog was killed, showing the same findings. At the end of two months four more dogs were killed, with the same findings. In one of these the ribbon was placed more tightly than usual, and cut only a small way into the tissues. At the end of five and one-half months three more animals were killed. In these the ribbon was covered by a glazed, transparent tissue, as in Figure 13. The pylorus in two was perfectly free, while in the third quite dense adhesions were formed between the pylorus and the liver. All of these stomachs were put to the water test, and the pylorus found absolutely closed.

1. Strauss, A. A.: Surg., Gynec. and Obst., January, 1914.

In six additional dogs a rubber ribbon was used instead of silk ribbon, the rubber being impregnated with 15 per cent. sulphur. All of these animals, with the exception of one, died in from five to eight days following operation, the constant contractile power of the rubber cutting through the pylorus. One animal lived, and was killed at the end of two months. It showed the same results as with the silk-ribbon

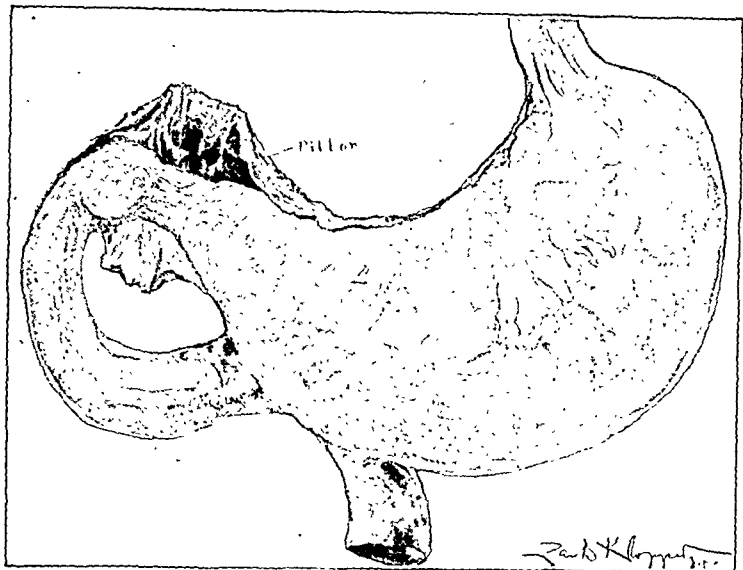


Fig. 12.—Stomach from dog killed five days after operation. Ribbon completely covered by tissues from lesser omentum.

method, only here under high pressure the pylorus was not water-tight.

CONCLUSIONS

1. In the sixteen dogs operated on by the sub-mucous transplant method, the pylorus was water-tight under hydrostatic pressure, and as shown by fluoroscope and roentgenogram. The free fascial transplant became organized with the mucosa and muscularis in every instance, producing sufficient contraction to hold the pylorus closed without producing

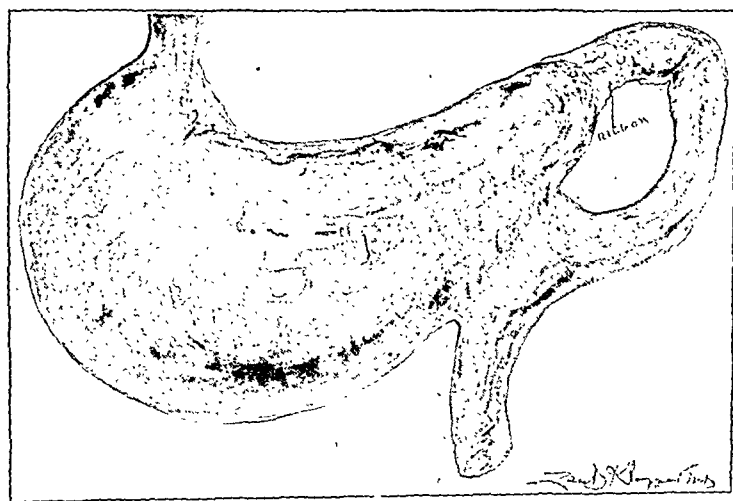


Fig. 13.—Stomach from dog killed five and one-half months after operation. Ribbon covered by glazed transparent tissue.

any necrosis of mucosa. This I believe is due to the fact that the connective tissue used is placed under a tension similar to what it would be in the anterior sheath of the rectus.

2. The free transplant placed between the mucosa and muscularis has the advantage of not having to overcome the powerful peristaltic contractions of the pyloric musculature, and is not subject to the forma-

tion of adhesions and inflammatory changes, as a transplant placed around the musculature of the pylorus would be.

3. The method of shelling out the mucosa is safe, in that there is no danger of hemorrhage from large vessels, and less danger from infection, as in the methods by which the mucosa has to be divided.

4. The silk-ribbon method, while it is very simple and produces a perfect closure, and while the number of experiments seems to show it to be a fairly safe method, has the objection of having a large foreign body buried. Of the two methods the transplant method is by far the one of choice. The rubber method I would consider dangerous and a failure.

I want to thank Dr. E. Kirk of the Morris Institute of Medical Research for the valuable advice he has given me while carrying on this work, and Miss Wilton who assisted me in the operative technic.

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THE RESULTS IN ONE HUNDRED OPERATIONS PERFORMED ON THE DIAGNOSIS OF BRAIN TUMOR*

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The firm confidence with which the experienced surgeon of the present day approaches the solution of the problems set before him suffers a severe setback when these involve the operative treatment of brain tumors. True, we frequently read of single successful operations, but the infinite measure of our failures becomes apparent only in a few larger statistics. In no other domain of surgery are we so much at the mercy of the treacherous patient. None of us have been spared annoying surprises and numerous disappointments. And yet, when we glance back at what has been achieved at operations performed on the diagnosis of brain tumor, we need not abandon ourselves to too pessimistic a view of our accomplishments. We should always bear in mind that, without operation, the patients progress toward a terrible fate—excruciating headaches, epileptic attacks, paralysis, and chiefly, steadily advancing blindness which renders life no longer worth the living for these unfortunates. And here we find the explanation why we never encounter serious difficulties in obtaining the consent to operation on the part of the patients themselves, or of their relatives, although they have been made familiar with its dangers.

The results of operations for brain tumor will always depend on the certainty of diagnosis and the peculiarity of each particular case. The relatively large number of our decompressions demonstrate that impossibility of localizing the process, or of determining its extent, only too often frustrates radical operation and, with it, a permanent result. Much could be improved if brain-tumor suspects were only brought under competent neurologic observation early in the disease. I am very well aware of the difficulties of a diagnosis of brain tumor in the beginning of the affection.

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

We, too, are in a position to consider the diagnostic brain puncture of Neisser and Pollak as a great step forward, and its slight danger must not weigh too heavily against its great advantages. More particularly, we should not overestimate the danger of hemorrhage. At the necropsies in two cases I was able to note that the median meningeal artery had avoided the puncturing needle and that in another case the needle had perforated the transverse sinus without causing a hemorrhage. Still, I have occasionally observed a direct rise of pressure in connection with brain puncture which necessitated immediate operation. From this I draw the lesson that diagnostic brain puncture should be performed only under conditions which permit immediate trepanation, should this become necessary.

The diagnostic brain puncture also enables us to exclude an operation as futile in some cases, namely, when pathologic products can be demonstrated through punctures far apart. Thus, only recently I was able to demonstrate glial proliferations in a little girl, the suspected host of a tumor of the temporal lobe, through puncture into the frontal lobe as well as into the temporal fossa. In view of the extent of the process a radical operation would have been beyond the scope of possibility, but, in addition, exact histologic study showed these glial proliferations to be reactive in character rather than elements of a genuine tumor. I was gratified to note that as the result of conservative treatment all symptoms, including choked disk, materially subsided.

Occasionally definite tumor symptoms with focal phenomena may also be present without any space-reducing process at all. Bonnhoeffer and I have seen such a case in which there was choked disk and other symptoms pointing to a left-sided tumor of the frontal brain. Yet, at the trepanation only a softening focus was found, which, as could be demonstrated at necropsy, had developed gradually on the basis of an arteriosclerosis.

In contrast thereto, I unexpectedly encountered a tumor in a woman, aged 31, who was admitted to the clinic with posttraumatic convulsions. Observation disclosed cortical epilepsy arising from the left facialis region, but no tumor symptoms. Excision of the facial center was done, and its microscopic examination suggested reactive glial proliferations. At the operation, however, the surroundings had appeared suspicious of tumor, and at the second operation a true glioma which diffusely infiltrated the depth was removed as far as possible. This was the only one of my cases in which even the symptom of headache was absent.

That very large tumors may develop with relatively slight symptoms, especially in the domain of the central region, I was able to observe repeatedly, while it is generally assumed that tumors in this region produce the classical symptoms very early. This is probably true only of tumors situated close to the surface; those deeper down may attain considerable dimensions without furnishing phenomena of diagnostic significance.

Some time ago I successfully excised such a sub-cortical tumor of the size of a man's fist—a fibrosarcoma of the right central region—in a male patient from Manila. Notwithstanding the size of the tumor, choked disk developed only a few days before operation, almost under my very eyes, more marked on the affected side than on the normal.

Generally speaking, I have frequently seen more marked, occasionally also only unilateral, choked disk on the same side as the tumor, but I do not believe that any definite conclusions may be drawn from this as to the localization of the tumor, since the reverse has also occasionally been observed. Absence of choked disk was noted in five cases.

Palliative trepanations which I had to perform over the central region or in its neighborhood, for instance, in disease of the posterior frontal or temporal brain, were in some cases followed by annoying contralateral paresis or complete paralysis. This annoying complication, experienced also by many other operators, in some of the cases subsided in the course of a few weeks; in other cases, however, improvement, as compared with the phenomena developing immediately after operation, unfortunately does not take place. Measures of prevention, such as two-stage procedure, a very large bone defect, smoothing of the edges of the bone defect, covering them with flaps from the dura, etc., did not succeed in averting the unpleasant complication when the pressure was so great that when the dura was opened, the brain was immediately forced into the gap. This contralateral paresis was observed with special frequency in inoperable gliomas.

Repeatedly decompression was not successful, namely, in cases in which even approximate localization was impossible. When, for example, in disease of the posterior cranial fossa, the decompression defect is placed over the cerebrum and vice versa, the designed relief (collateral drainage) is not obtained. In such doubtful cases it might possibly be well to decompress simultaneously above and below the tentorium, which is possible from an area in the occiput. Two opposing door-wing flaps of the dura are formed with the transverse sinus as a temporary base.

I have seen nothing that is gratifying from puncture of the corpus callosum and ventricular drainage. True, my material in this respect is rather small. But since in one case at necropsy seven weeks after puncture of the corpus callosum the opening was found completely healed, and in another case eight weeks after operation it could no longer be found at all, I am averse to continuing the employment of this measure, especially since palliative trepanation has rendered excellent service, notably in cases of chronic hydrocephaly.

As regards the technic of trepanation for brain tumor, I have departed from the formerly preferred one-stage operation and have become an adherent as a matter of principle of the two-stage procedure, even in palliative trepanations, unless acute symptoms of brain-pressure demand immediate opening of the dura.

The introduction of local anesthesia with 0.5 per cent. solutions of novocain-suprarenin has, in my clinic too, been welcomed as a great advance. One can always operate on the sitting patient, respiration is free and under easy control, and no special hemostasis is necessary for the scalp. In sensitive patients an ostensible narcosis is introduced which, however, remains so superficial that conversation can be carried on with the patient. I now employ full narcosis with ether only in exceptional cases, and then prophylactic hemostasis is attained by means of Makkas' clamps, which with us have displaced the back-stitching suture of Heidenhain.

For the cerebrum osteoplastic flaps are made. I formerly used mostly electrically-driven instruments—Doven's burr, Borchard's excellent plow and

Sudeck's fraise. But since this rather complicated instrumentarium has very often failed to work, I have now again returned to the employment of hand-drills, Dahlgren's forceps, or Gigli saw. After the flap has been divided on three sides, the bone is slightly grooved at the base and then broken across with the aid of two raspatories. The splitting of the dura is done in various ways, forming one large, or two door-wing, flaps, or with cross-incisions.

In the posterior cranial fossa preservation of bone is always dispensed with, because the breaking across of the flaps is here not devoid of danger and the periosteum as well as the powerful muscles at the back of the neck offer sufficient protection. In one case, in which the osteoplastic method was employed in the posterior cranial fossa, on injection of the local anesthetic for the second operation, respirations suddenly ceased. Evidently the injected fluid had forced the lower edge of the bone flap against the upper portion of the medulla oblongata, thus causing the alarming paralysis of respiration. This was fortunately relieved by long-continued artificial breathing.

Among the 104 surgical interventions performed at the Breslau clinic on 100 patients within the past six and one-half years, we succeeded in removing the tumor in 30 instances. In addition, the presence of a tumor was later demonstrated in 34 cases. Three cases proved to be tuberculous meningitis. In the remaining cases the tumor symptoms were traced back to hydrocephalus, the residues of hemorrhages, etc. In a few patients who died and on whom no necropsy was obtained, the cause of the disease could not be definitely ascertained.

Forty-five patients died as a result of the operation and its complications; F. Krause, too, who probably disposes of the largest material in Germany, has an operative mortality of about 50 per cent.; von Eiselsberg's mortality is 38 per cent. Twenty-four of the patients operated on are positively known to be living. Of those who survived the operation and its complications:

- 14 died in from 1 to 3 months
- 5 died in from 4 to 5 months
- 3 died in from 6 to 8 months
- 2 died in from 9 to 12 months
- 2 died after 1 year and 3 months
- 1 died after 1 year and 6 months
- 1 died after 2 years and 6 months

Among the patients operated on there are still living:

- 6 less than 6 months after operation
- 3 less than from 8 to 10 months after operation
- 1 less than 1 year after operation
- 2 less than 1¼ years after operation
- 1 less than 1½ years after operation
- 3 less than from 2 to 2¾ years after operation
- 6 less than from 3 to 4 years after operation
- 2 less than from 5 to 6 years after operation

Among these twenty-four survivors there are two tumors of the hypophysis, one tumor of the base of the frontal lobe, one of the parietal lobe, two tumors of the cerebellopontine angle and three tumors of the central region. In thirteen cases no tumor was found.

Of these twenty-four patients eleven may be considered cured for more than six months to six years; only two remain uninfluenced in their disease, while the remaining show, some of them very considerable, improvement.

Four of the cured patients had become totally blind before operation, and these had good vision restored to them later.

It should be emphasized here that even among the conservatively treated cases, in which there was suspicion of a brain tumor, in three cases complete recovery was achieved. Before the German Surgical Congress of the year 1913, Oppenheim, whose great experience in this domain commands the admiration of all of us, has sought to warn against too great a tendency for operation, referring to the good results achieved with conservative treatment. So prominent a neurologist as Oppenheim will certainly often be in a position to find the indications for an expectant attitude justifiable, and we surgeons are always dependent as a last resort on the advice of the neurologist and chiefly of the experienced ophthalmologist. Too long a delay, however, when choked disk is present, could scarcely be justified.

Examining, for the purpose of comparison, statistics of conservatively treated brain tumors, we find in the compilation of Bonhoeffer that among 63 cases observed in his clinic 26 patients were operated on and that 26 died in his clinic without operation, while 11 patients have withdrawn from further treatment. Among the patients who were treated in my clinic without operation, 58.8 per cent. also have died within six months. Of the remaining, either nothing at all is known, or the operation was declined by us on account of uncertainty of diagnosis—a course justified by later events.

The results to be expected after operations performed on the diagnosis of brain tumor may by no means be designated as absolutely bad from the results reported, when we bear in mind that the host of a brain tumor in every instance faces death after the most horrible suffering. The beneficent influence of decompression, more particularly in cases of chronic hydrocephalus, on restitution of vision, encourages and urges also early surgical procedure. Especially meritorious in advancing brain surgery in America as regards technic and diagnosis has been the work of Halsted's school, more particularly that of Cushing, who probably at this time possesses the greatest experience in this domain. We are only just beginning to gather experiences, and the technic also needs further perfection. Whether improvements in methods of diagnosis will lead to early recognition of the disease, and with this to early operation for brain tumor, is still an open question. Should success in this direction reward our efforts, we shall later be able to look back with the greater satisfaction on our surgical achievements.

ABSTRACT OF DISCUSSION

DR. WILLIAM G. SPILLER, Philadelphia: Dr. Küttner has mentioned the difficulties of differentiating between brain tumor and simple hydrocephalus. Any one doing decompression should not imagine that he is doing a trivial operation. It does not usually produce serious results, but it may produce very grave results. Dr. Küttner's paper is decidedly pessimistic. Decompression should be done only when there are proper indications for its use. I have seen decompression make a mild dementia very grave; I have also seen it produce hemiplegia by pressure of the blood-vessels against the bone at the opening. The hernia itself is disfiguring, but the disfigurement should be disregarded if the results otherwise are satisfactory. Decompression will do no good in saving vision if optic atrophy has occurred, and I have declined to recommend it under such circumstances. It is not always possible to determine whether optic atrophy has occurred. In high grades of choked disk decompression seems almost useless for atrophy will almost invariably follow.

At the meeting of the New York Neurological Society and Section in Neurology of the New York Academy of Medicine last fall I called attention to a condition which has been almost entirely overlooked—the enlargement of the brain itself occurring with tumor. I have seen this enlargement of the brain with other tumors than glioma and believe it is caused by irritation from the tumor. This enlargement helps very materially in the production of intracranial pressure. Puncture of the corpus callosum is of great interest and importance.

The diagnosis between hydrocephalus and tumor is difficult, as Professor Küttner mentioned. I think we have a valuable means in the roentgenogram. In many cases of intense intracranial pressure the Roentgen rays will show on the inner table of the skull markings like the convolutions of the brain. This is not a positive means of diagnosis and yet I think it is valuable. It is more likely to occur with hydrocephalus, when pressure is great, than with tumor. It may occur with tumor if the tumor has developed slowly. Most tumors produce much pressure and are likely to cause death before this atrophy of bone is intense. Circumscribed hydrocephalus under certain circumstances cannot be helped by puncture of the corpus callosum.

Professor Küttner has referred to brain puncture. So far as I know it is a method which has not been received favorably by American and English surgeons. He also referred to cases of brain tumors without symptoms. Symptoms may be slight when a glioma does not destroy the axis cylinders passing through the tumor, though it may destroy the medullary sheaths.

STUDIES IN LIVER FUNCTION*

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AND

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In recognition of the need of better criteria for judging of the functional capacity of the liver in disease, this investigation was undertaken to determine (1) the degree and frequency with which functional changes can be demonstrated in anatomically diseased livers, (2) in what clinical types of liver injury the functional changes are most marked and (3) the diagnostic and prognostic value of these changes. In other words, an attempt has been made to regard the liver, in disease, from a physiologic point of view, and to study its various functions with the hope of ascertaining its behavior under pathologic conditions.

THE FUNCTION OF THE LIVER IN HEALTH

In health the liver has three well-established functions: 1. The glycogenic function, which has to do with carbohydrate metabolism, and consists in (a) the conversion of the monosaccharids (dextrose, levulose and galactose) into glycogen; (b) the temporary storage of that glycogen as such, and (c) the reconversion of it by enzyme activity into dextrose as needed in the body. 2. A participation in nitrogenous metabolism which consists in the conversion of certain nitrogenous bodies (ammonia, amino-acids, etc.), into urea. 3. The production of bile.

In addition, the liver apparently plays a part in the production of fibrinogen and antithrombin, although

the connection of the latter functions with the liver is not so well established as the first three mentioned.

THE TESTS OF LIVER FUNCTION

The following tests based on well-known physiologic functions of the liver have been employed:

1. *Carbohydrate Metabolism*.—In this connection two tests have been employed, namely, Strauss¹ levulose test and Bauer's² galactose test. The former consists in the ingestion of 100 gm. of levulose on an empty stomach and the examination of the urine voided during the next few hours to determine the presence or absence of the sugar, using Fehling's and Seliwanoff's tests. Bauer's is similar to Strauss' test except that 30 gm. of galactose are used instead of 100 gm. of levulose. The ingestion of these sugars in the amounts indicated does not result in their appearance in the urine in normal individuals, according to Strauss. Their appearance in the urine is due to a decrease in tolerance for these substances, indicative of decreased functional capacity of the liver.

2. *Nitrogenous Metabolism*.—In relation to nitrogenous metabolism and liver function a study of the nitrogen partition in the blood and in the urine has been made. If the liver converts the ammonia and amino-acids of the blood into urea, then it might be expected that in liver injury we should find a decrease in the urea percentage of the total non-protein nitrogen of the blood and an increase in the amino-acid nitrogen of the blood, while in the urine we might expect to find a decrease in the relative amount of urea with an increase in the ammonia and amino-acids. (The view that the liver is not wholly responsible for the conversion of the ammonia and amino-acids of the blood into urea has recently received support from the work of Folin³ and Van Slyke⁴ and of Fiske and Sumner.⁵)

3. *Urobilinogen*.—It has been maintained by many observers that the presence of urobilinogen in the urine is indicative of liver disease. Determinations were made in the majority of cases, but owing to the work of Wilbur and Addis⁶ and our own unsatisfactory results, they were discontinued. These investigators showed that observations on a single or a twenty-four-hour specimen have no significance. Great variations occur from day to day. Only when repeated tests are made covering a period of two weeks, controlled by studies of the urobilin content of the feces, can findings be accepted.

4. *Fibrinogen*.—There is evidence to show that the liver is active in the formation of fibrinogen, and Whipple⁷ has suggested that the determination of the amount present in oxalated plasma may be used as an index of liver function.

5. *Lipase*.—Whipple⁸ has also suggested that the estimation of the lipolytic activity of the blood may constitute a test of liver function.

1. Strauss: Berl. klin. Wechschr., 1898, xxxv, 398; *ibid.*, 1899, xxxvi, 159; Deutsch. med. Wechschr., 1901, xxvii, 757.

2. Bauer: Wien. med. Wechschr., 1906, lvi, 20.

3. Folin: Jour. Biol. Chem., 1912, xi, 87.

4. Van Slyke, D. D.: Jour. Biol. Chem., 1913, xvi, 213; Protein Assimilation, *abstr.*, THE JOURNAL A. M. A., April 12, 1913, p. 1183.

5. Fiske and Sumner: Jour. Biol. Chem., 1914, xviii, 285.

6. Wilbur, R. L., and Addis, Thomas: Urobilin: Its Clinical Significance, Arch. Int. Med., February, 1913, p. 235.

7. Whipple and Hurwitz: Jour. Exper. Med., 1911, xiii, 136. Whipple, G. H.: Hemorrhagic Disease—Septicemia, Melena Neonatorum and Hepatic Cirrhosis, Arch. Int. Med., March, 1912, p. 365. Whipple, Mason and Peightal: Bull. Johns Hopkins Hosp., 1913, xxiv, 207.

8. Whipple, Mason and Peightal: Bull. Johns Hopkins Hosp., 1913, xxiv, 207. Whipple, Peightal and Clark: *ibid.*, 1913, xxiv, 343. Whipple: Am. Jour. Physiol., 1914, xxxiii, 50.

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6. *Phenoltetrachlorphthalein*.—This drug was introduced by Rowntree, Hurwitz and Bloomfield⁹ as a test for hepatic function, and clinical studies by them and simultaneous experimental studies by Whipple and co-workers⁸ showed that a normal excretion could be established and that many liver injuries, particularly of severe grades, were associated with a decided decrease in the phenoltetrachlorphthalein output. Further studies with this test have been carried on.

7. *Fibrinolytic Ferment*.—Dr. Goodpasture of the pathologic staff was already interested in the presence of a fibrinolytic ferment in the blood in liver cirrhosis when this work was undertaken. Samples of blood from all our patients were submitted to him for study, and through his courtesy we present the results of his studies, details of which will appear later. The ferment is specific for fibrin, does not attack fibrinogen and is destroyed by heating to 56 C. (132.8 F.).

METHODS AND NORMAL LIMITS OF TESTS

Phenoltetrachlorphthalein.—This test was employed according to the method described by Rowntree, Hurwitz and Bloomfield, details of which are given in full in their publication.⁹ The lower limit of normal excretion is considered to be 30 per cent. in forty-eight hours after the intravenous injection of 400 mg. of the substance. In health, phenoltetrachlorphthalein is practically never excreted in the urine after injection of such amounts.

Fibrinogen.—The heat coagulation method as described by Whipple¹⁰ was used in these determinations, and values below 350 gm. per hundred c.c. were regarded as abnormal.

Lipase.—Determinations of the lipolytic activity of the blood were made, using Loevenhart's¹¹ method, which consists in the determination of the total acid production of the blood when exposed to known quantities of ethyl butyrate at 37 C. (98.6 F.). The result is expressed as the number of cubic centimeters of tenth-normal acid produced by 1 c.c. of plasma and 0.26 c.c. ethyl butyrate, diluted to 4 c.c. and allowed to react for from twenty to twenty-four hours. The upper limit of normal has been taken to be 0.40 c.c. of tenth-normal acid.

The Nitrogen Partition in the Blood and Urine.—The total non-protein nitrogen of the blood was estimated by the micro-Kjeldahl method of Folin and Denis,¹² with slight modifications, as suggested by Dr. B. B. Turner.¹³ The urea percentage of the total non-protein nitrogen of the blood was determined by Marshall's¹⁴ method, utilizing soy bean urease, and values below 40 per cent. have been regarded as abnormal.

The amino-acid determinations were made by Van Slyke's¹⁵ method. As yet, data concerning the amount of amino-acids present in the blood of normal individuals are scarce, but from a study of patients who were practically normal, 3 mg. per hundred c.c. of serum has been the value regarded as the upper limit of normal for the free amino-acid nitrogen.

The total nitrogen of the urine was determined on twenty-four-hour specimens collected under toluol by

the Kjeldahl-Gunning method, the urea by Marshall's¹⁶ and the ammonia by Folin's¹⁷ method. The distribution of the urinary nitrogen between urea and ammonia has been shown to be dependent on the total excretion of nitrogen. The normal limits of the various nitrogenous constituents of the urine, with varying levels of nitrogen excretion, are therefore hard to define sharply. However, one can probably safely conclude that with a urinary nitrogen excretion of 10 gm. or more, the lower limit for urea nitrogen is 80 per cent. and the upper limit for ammonia nitrogen is 5 per cent., while with a nitrogen excretion of from 5 to 10 gm., the lower limit for urea is 70 per cent. and the upper limit for ammonia is 8 per cent. Furthermore, excessive acid production in the organism is accompanied with a lowering of the urea percentage and an increase in the ammonia percentage. The free amino-acid in the urine was determined by Van Slyke's¹⁸ method, and 1.5 per cent. has been adopted as the upper limit of normal. Future work may change these values.

SUMMARY OF FINDINGS

Forty-five cases have been studied in this series, in nearly all of which some abnormality of the liver was thought to be present. Some of the cases called cirrhosis were certainly not far advanced, and in some instances it appeared that the diagnosis was not definite, differences in opinion being frequently encountered. On account of lack of space the details of the cases are not given here,¹⁹ but a summary of the results obtained is given in Table 1.

Column 1 shows total number of tests made, Column 2 the total number of positive results, while the remaining columns show the number of positive results in the various diseases. The figures in italics indicate the number of cases in which each particular test was applied in the particular disease studied, while the other figures indicate the number of positive findings in the particular disease.

From this table it will be seen that the following results were obtained: The *phenoltetrachlorphthalein* test was applied in the feces in 42 cases with 16, and in the urine in 34 cases with 21 positive. *Fibrinogen* was determined in 40 instances, 8 of which were below 350 mg. and 12 below 400 mg., while 8 were above 800 mg., that is, 20 abnormal findings. The *lipolytic activity* of the blood was investigated in 39 cases, 5 of which showed an acid production of more than 0.4 c.c. and 3 above 0.5 c.c. The presence of *fibrinolytic ferment* was tested for in 40 instances, and found in 7, all of which were cirrhotics. The *galactose* test was applied in 29 and the *levulose* in 19 cases, the former showing only 4 and the latter 2 positive findings. The *total non-protein nitrogen* and *urea nitrogen of the blood* were determined in 37 cases. The urea nitrogen was less than 40 per cent. of the total in 9 instances. The *amino nitrogen of the blood* was determined in 35 cases, and amounted to more than 3 mg. per hundred c.c. in 25 instances and above 4 mg. in 13 instances. The *total nitrogen urea and ammonia in the urine* were determined in 41 cases. The total nitrogen of the urine was above 10 gm. in 13 cases, and in these

9. Rowntree, Hurwitz and Bloomfield: Bull. Johns Hopkins Hosp., 1913, xxiv, 327.

10. Whipple: Am. Jour. Physiol., 1914, xxxiii, 50.

11. Loevenhart: Am. Jour. Physiol., 1902, vi, 331.

12. Folin and Denis: Jour. Biol. Chem., 1912, xi, 527.

13. These modifications will be described shortly by Dr. Turner.

14. Marshall: Jour. Biol. Chem., 1913, xv, 487.

15. Van Slyke: Jour. Biol. Chem., 1912, xii, 399.

16. Marshall: Jour. Biol. Chem., 1913, xiv, 283; xv, 495.

17. Folin: Ztschr. f. physiol. Chem., 1902, xxxvii, 161.

18. Van Slyke: Jour. Biol. Chem., 1913, xvi, 121.

19. Findings of all tests, clinical notes, necropsy findings in fatal cases together with a discussion of the functional findings appear in the article in the Proceedings of the Society of American Physicians, 1914.

the urea nitrogen was below 80 per cent. in 7 instances, and the ammonia nitrogen above 5 per cent. in 10 instances. Twenty-one cases showed a urinary nitrogen between 5 and 10 gm., and of these, 4 cases showed a urea nitrogen below 70 per cent. and 11 an ammonia nitrogen above 8 per cent. The *amino-acid nitrogen* content of the urine was investigated in 22 cases, 12 of which showed values above 1.5 per cent. of the total nitrogen.

Liver Cirrhosis.—The results in the fourteen cases of cirrhosis studied were as follows: Phenoltetrachlorphthalein studied in feces in 14, positive in 6, in urine in 11, positive in 7; fibrinogen in 14, positive in 6; lipase in 14, positive in 2; fibrinolytic ferment in 14, positive in 7; galactose in 11, positive in 2; levulose in 10, positive in 2; urea nitrogen percentage (blood) in 14, positive in 5; amino nitrogen (blood) in 14, positive in 10; urea percentage (urine) in 14, positive in 3; ammonia percentage (urine) in 14, positive in 10; amino nitrogen percentage (urine) in 7, positive in 5.

Myocardial Insufficiency.—Twelve cases of myocardial insufficiency were studied. Phenoltetrachlorphthalein studied in feces in 9 cases with 1 positive,

phenoltetrachlorphthalein positive in urine and the urea only 21 per cent. of the total non-protein nitrogen of blood. These cases are in keeping with the three cases of liver carcinoma reported last year in which the phenoltetrachlorphthalein excretion was 8, 14 and 7 per cent., respectively. However, a slight decrease in phenoltetrachlorphthalein, for instance, from 20 to 25 per cent. does not indicate liver carcinoma, since such findings have been found in gastric carcinoma when no proof of liver metastasis was at hand, in which case it is merely the expression of the influence of anemia and cachexia on liver function.

Anemia.—Clinically, a severe grade of anemia depresses the function of the liver as indicated by phenoltetrachlorphthalein. That there is also a decrease in the fibrinogen has been shown by Whipple, but owing to the quantity of blood necessary for carrying out the test, it is not applicable in all cases of anemia. Changes in the urinary nitrogen partition may appear.

Luetic Hepatitis.—Of the two cases studied, one showed normal phenoltetrachlorphthalein, a low lipase, urinary nitrogen partition changes and a positive galactose, while the other showed a low phenoltetra-

TABLE 1.—SUMMARY OF FINDINGS

	Total Number of Tests	Total Number of Positive Tests	Cirrhosis of Liver		Myocardial Insufficiency		Carcinoma		Syphilitic Hepatitis		Pernicious Anemia		Poly- serositis		Miscel- laneous	
Number of cases tested	..	..	..	14	..	12	..	3	..	2	..	2	..	2	9	10
Phthalein in feces	42	16	14	6	9	1	3	2	2	1	2	2	2	0	9	4
Phthalein in urine	34	21	11	7	10	5	3	2	2	1	1	0	2	2	5	4
Fibrinogen ..	36	8	14	6	11	1	1	0	2	0	—	—	2	0	1	1
Fibrinolytic ferment ...	40	7	14	7	12	0	1	0	2	0	—	—	2	0	9	0
Lipase	39	5	14	2	11	1	1	0	2	0	—	—	2	0	9	0
Galactose ..	29	4	11	2	7	0	1	0	1	1	—	—	2	0	4	2
Levulose ..	18	2	10	2	8	0	0	0	—	—	1	0	1	0	3	0
Blood:																
Urea-N %...	37	9	14	5	12	1	1	0	2	1	—	—	2	2	6	0
NH ₂ -N %...	35	25	14	10	9	7	1	1	2	1	—	—	2	2	6	4
Urine:																
Urea-N %...	41	11	14	3	11	3	2	0	2	2	2	1	2	0	8	2
NH ₂ -N %...	41	28	14	10	11	7	2	0	2	2	2	2	2	2	8	2
NH ₂ -N %...	22	12	7	5	6	2	1	0	1	2	1	0	1	1	5	2

lowest being 18 per cent., and in urine 10 cases with 5 positives; fibrinogen in 11 with 1 positive; lipase in 11 cases with 1 positive; fibrinolytic ferment in 12, positive in none; galactose in 7, positive in none; levulose in 3, positive in none; urea nitrogen percentage (blood) in 12, positive in 1, in which 6 were over 50 per cent., and 3 over 60 per cent.; amino nitrogen (blood) in 9, positive in 7.

The functional injury in liver cirrhosis is relatively greater than in chronic passive congestion, for a consideration of all the tests in each condition indicates that in 10 of the 14 cases of cirrhosis there was definite functional injury, 3 with less marked injury and only one with a practically normal function throughout, while in chronic passive congestion only 4 showed definite decrease, while 7 showed a practically normal function.

Carcinoma of Liver.—Little data outside of the phenoltetrachlorphthalein have been collected. C 28, who definitely had metastasis to the liver,²⁰ showed a 23 per cent. output five months before death. H 29, with gastric carcinoma and clinically thought to have metastasis to the liver, showed a 24 per cent. output,

chlorphthalein content in feces, positive in urine, an abnormally high fibrinogen, low urea percentage of total non-protein nitrogen in blood and urinary nitrogen partition changes.

Polyserositis.—Two cases with much the same clinical condition and both with large livers showed practically identical findings, for instance, normal phenoltetrachlorphthalein in feces, but positive in urine, fibrinogen and lipase normal, low urea percentage of total non-protein nitrogen in blood, and changes in urinary nitrogen partition, but no decreased tolerance for sugar.

THE PHENOLTETRACHLORPHTHALEIN TEST

Previously the results of eighty applications of the test on sixty-seven patients were reported. The total number of patients studied to date is 113, thirty-three of whom had no clinical evidence of liver disease. The positive findings in health and in various types of liver disease, together with the appearance of the drug in the urine, are shown in Table 2.

NECROPSY CASES

In this series five cases came to necropsy, and pathologic findings controverting the functional findings have not been encountered. It is of interest to note

20. Details of these cases can be found in the article in the Proceedings of American Physicians.

that two of the cases which clinically were thought to be cirrhosis of the liver, but showed slight functional changes, proved, at necropsy, to have no cirrhosis at all, but to be cases of chronic peritonitis in which the liver was enlarged owing to a thickened capsule. In one instance, a case of cirrhosis, microscopic study of the liver suggested greater injury than was shown by the functional studies. In the six cases which came to necropsy last year there was harmony between the anatomic and functional findings of the phenoltetrachlorphthalein test.

RELATIVE VALUES OF TESTS

The series of cases is not sufficiently large to draw far-reaching conclusions as to the relative values of the different tests, but the following impressions have been received:

(a) Phenoltetrachlorphthalein: A phenoltetrachlorphthalein output in the feces below 30 per cent. or its appearance in the urine is infrequent in health and frequent in anatomically diseased livers. A normal output does not exclude liver injury.

(b) Fibrinogen: Low values are frequent in cirrhosis, but inconstant. Very low findings may carry prognostic significance.

TABLE 2.—POSITIVE FINDINGS IN HEALTH AND IN LIVER DISEASE

	Examined	Less Than 30 Per Cent.	Urine Examined	Positive
Normals	33	2	22	3
Cirrhosis	18	9	11	7
Congestion ..	32	11	10	6
Carcinoma of liver	6	6	3	2
Carcinoma ..	5	3	3	2
Luetic liver..	5	2	2	1
Severe anemia	9	7	1	0
Miscellaneous.	5	2	2	2
Totals	113	42	54	23

(c) Lipase: Determination of lipolytic activity of blood furnishes little or no information of diagnostic or prognostic value in these types of cases.

(d) Bauer's galactose and Strauss' levulose tests yielded very little information in this series.

(e) Dr. Goodpasture's fibrinolytic ferment studies on this series of cases show that this ferment is present only in cirrhosis and hence when present is of diagnostic value.

(f) Blood Nitrogen Partition: Urea nitrogen was low in several instances and especially low in cases of advanced cirrhosis. Amino-acid nitrogen was high in a considerable proportion of the cases.

(g) Urinary Nitrogen Partition: The ammonia and aminonitrogen were increased in most of the cases studied, particularly in cirrhosis. Owing to the non-exclusion of acidosis considerable difficulty is experienced in interpreting these results. It would have been advisable to have attempted to exclude acidosis by the feeding of alkalies.

PRACTICABILITY OF TESTS

The phenoltetrachlorphthalein test involves an intravenous injection and careful collection of stools for forty-eight hours. Three undesirable features are connected with its application: 1. The quality of red color obtained in certain instances (from 10 to 20 per cent. of the cases) is such that accurate quantitative estimation is difficult. Only in rare instances is this

a serious difficulty leading to error of more than 5 per cent. 2. Thrombosis frequently follows at the point of injection, as evidenced by slight local pain or tenderness together with resistance offered to the palpating finger along the course of the vein. This occurred in eight instances in this series of cases, but in no case has it occasioned serious discomfort or resulted in actual harm to the patient. 3. With salt solution made with freshly distilled water chills following the injection are infrequent. When no dilution is employed chills are less frequent and not accompanied with increase in temperature.

Fibrinogen determinations are inapplicable in the presence of severe anemia. They necessitate the withdrawal of from 40 to 50 c.c. of blood. A high speed centrifuge and considerable chemical equipment are requisites. The test is time-consuming. Lipase determinations require neither complicated apparatus nor much time. The determination of the total non-protein nitrogen, urea nitrogen and amino-acid nitrogen of the blood cannot be carried out when severe anemia exists. Technically the determinations are easy but are time-consuming. The nitrogen partition in the urine requires somewhat less time. Galactose can be administered without discomfort to the patient, but technical difficulties attend the use of levulose, at least 25 per cent. of the patients refusing to take the full amount or developing nausea or vomiting following its ingestion. The fibrinolytic ferment is readily demonstrated. Urobilinogen determinations in the urine are valueless unless made daily for a period of two weeks and unless associated with urobilin determinations in the feces.

CONCLUSIONS

1. Outspoken changes in liver function can be demonstrated in most cases of advanced liver cirrhosis, in markedly congested livers associated with myocardial insufficiency, in carcinoma of the liver, in luetic livers and in conditions of cachexia with marked anemia.

2. Functional changes have been most marked in cirrhosis, neoplasm of the liver and in cachectic conditions associated with severe grades of anemia. Functional changes in chronic passive congestion have not been frequent or pronounced.

3. Harmony in the findings of the tests is present in some cases, that is, most of the tests indicating either a decrease function or a normal function. However, lack of harmony is striking in other cases.

4. Concerning the relative merits of these tests the impressions that have been received are that the determination of the phenoltetrachlorphthalein excretion, the fibrinogen, and the nitrogen partition in the blood and urine are of decided value in revealing the presence of, and to a less degree the extent of, functional involvement, while the demonstration of a fibrinolytic ferment is of decided diagnostic importance. The determination of the sugar tolerance and of the lipolytic activity of the blood apparently afford information of much less value.

The information derived from these studies on the liver does not compare in diagnostic and prognostic value with that derived from corresponding studies of the kidney. This may depend on several factors, namely, (a) the inadequacy of our knowledge of liver physiology; (b) the limited number of cases and of types of severe liver injury under observation; (c) the possible existence of a great "factor of safety" in

the liver, whereby in case of necessity function is carried on efficiently by a relatively small proportion of liver substance; (*d*) the fact that the prognosis in many of these cases is controlled by factors other than decreased liver function, and (*e*) the lack at present of correlation of anatomic, clinical and functional findings occasioned by the newness of the subject. The results, however, encourage us in the belief that scientifically and also clinically this subject is worthy of extensive investigation.

ABSTRACT OF DISCUSSION

DR. WILLIAM S. THAYER, Baltimore: In the Johns Hopkins Hospital we believe that these tests have brought us somewhat nearer to an understanding of liver disease, but there is still much to be done. The tetrachlorphenolphthalein test for hepatic function is by no means of so clear a value as the phenolsulphonephthalein test for renal function, but the work may well lead to something in the future.

NINETY-THREE PERSONS INFECTED BY A TYPHOID CARRIER AT A PUBLIC DINNER

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The city of Hanford, Cal., experienced an explosive outbreak of typhoid fever in the latter part of March, 1914. The epidemic consisted of ninety-three cases, all of which were traced to a church dinner. The infection came from a typhoid carrier among those who prepared and served the food—a woman who did not suspect that she had ever had typhoid fever.

Of special interest were the incubation periods, which were, in the majority of instances, less than eight days. The shortest was three days.

The disconcerting observation was made during the investigation that under conditions which are not at all unusual, baking can actually incubate the inner portions of masses of food instead of sterilizing them.

THE OUTBREAK

The epidemic began with one case on March 20. During the following three days the daily number of

TABLE 1.—CASES IN THE HANFORD EPIDEMIC

Proved cases of typhoid fever (Cases giving a complete Widal reaction [dilution, 1:50] or a positive blood-culture.)	45
Cases of Typhoid Fever giving a partial Widal reaction. (Cases showing the symptoms of typhoid fever and giving a partial Widal reaction; most of these tests were made early in the disease.)	23
Cases of typhoid fever not giving the Widal reaction. (Cases presenting typical symptoms but failing to give the Widal reaction early in the disease; blood for further tests not obtained.)	7
Cases of typhoid fever not submitted to the Widal test. (Cases showing typical symptoms; blood not obtained for the Widal test.)	9
Doubtful cases of typhoid fever. (Cases showing symptoms suggestive of mild typhoid fever, but negative to the Widal test; blood not obtained late in the disease.)	9
Total number of cases	93

new cases rose rapidly to the maximum, nineteen. After that the number fell quickly. The last case developed on April 16.

On request of Dr. J. A. Crawshaw, the president of the Hanford Board of Health, to the California

State Board of Health, Dr. W. W. Cross was sent to investigate the early cases. His report stated that they were typhoid fever.

April 1, the State Board of Health instructed me to go to Hanford to investigate the outbreak and to advise measures for its control. I arrived in the morning of April 2 and stayed until the local investigation was finished, April 18. Most of the patients were visited at least once, and as a rule blood was taken for the Widal test or for a culture. The Hanford Board of Health, Dr. C. L. Scott, city and county health officer, and the physicians of Hanford cooperated vigorously in the investigation and furnished valuable assistance.

The total number of cases in the outbreak was ninety-three. Several other cases were investigated and were found not to be typhoid fever. The ninety-three cases were classified as in Table 1.

In Table 2 the cases are classified according to severity.

TABLE 2.—CASES CLASSIFIED ACCORDING TO SEVERITY

	Including Doubtful Cases	Excluding Doubtful Cases
Moderate and severe cases	77	77
Mild cases (in bed for very few days)	11	5
Ambulatory cases	5	2
Totals	93	84

Three of the severe cases resulted in death and several others in serious danger. The low mortality (3.2 per cent.) is in part due to the discovery in this sudden epidemic of more of the mild and ambulatory cases than would ordinarily have been detected.

The ages of the patients ranged from 16 months to 65 years. A baby 16 months old developed a severe case of typhoid fever and her blood gave a positive Widal reaction.

The majority of the cases of typhoid fever were typical.

Blood-cultures were taken in eleven of the cases, and the typhoid bacillus was isolated and identified in four.

Previous attacks of typhoid fever, without laboratory confirmation, were reported by fourteen of the patients.

A number who ate at the dinner were sick during the following night from a mild form of food poisoning which probably had no relation to the typhoid epidemic.

A number of the persons infected at Hanford traveled considerable distances during the incubation period. This illustrates how typhoid fever is carried into cities which are not responsible for the infection. Two of the ninety-three persons traveled over 200 miles to San Francisco, and developed the disease there. Three of the cases developed in Fresno, 30 miles north of Hanford. Although typhoid fever was conveyed to San Francisco, Fresno, Exeter, Alpaugh, Tulare, Armona and Selma, and to ranches in the country around Hanford, no secondary infections from these cases have come to my attention.

The infection could not be traced to the water, milk or vegetable supplies.

THE INFECTION TRACED TO A PUBLIC DINNER

Early in the investigation it was definitely determined that the infection came from food served at a public dinner and supper held in a public hall, March 17. All of the ninety-three persons who developed typhoid fever ate food served there. Eighty-five of the patients attended one or both of the meals and

received their infection in this way. The other eight were infected from eating food brought to their homes from the hall by friends.

A few examples taken from the great mass of evidence collected will illustrate the definiteness with which the outbreak was traced to the dinner on March 17.

After the noon meal several kinds of food were sent to a family which had recently undergone considerable hardship owing to the prolonged illness of the mother. She had undergone a severe surgical operation, and after spending a month in a hospital, which was free from typhoid fever, she had reached home on the day before the dinner. The family ate of the food and the mother and the four children developed typhoid fever.

In another household the mother helped at the dinner and ate there. Afterward she brought home some of the food to her children. The mother and two sons came down with typhoid fever. In another family the son was unable to attend the dinner, owing to his work in a nearby town. The mother helped at the dinner and ate there, and afterward took food home for her son. Both of them developed typhoid fever.

THE INCUBATION PERIOD

The Hanford outbreak furnished an unusual opportunity for observing the duration of the incubation period in typhoid fever, as the exact time of infec-

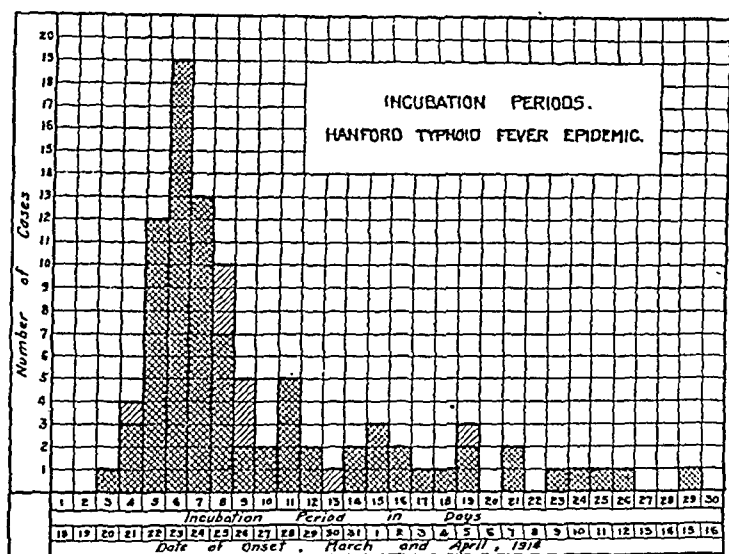


Chart of the cases in the Hanford typhoid fever epidemic, showing incubation periods and dates of onset. The heavily shaded areas represent definite cases of typhoid fever. The lightly shaded areas represent the doubtful cases.

tion was known. It is customary in investigating typhoid epidemics to determine the dates of onset and to count back about fourteen days to find the probable date of infection. This method would have excluded from consideration the real cause of this epidemic, as it would have indicated that the probable date of infection was at least a week before the date of the dinner which caused the epidemic. The first case developed three days after the dinner, and the sixth day after the date of infection saw the appearance of the greatest number of cases. Over half (forty-nine) of the ninety-three cases had developed by the evening of the seventh day, and over two-thirds (sixty-four) before the tenth day. The last case developed on the twenty-ninth day. The incubation periods and dates of onset are shown in the accompanying chart.

THE SOURCE FROM WHICH THE FOOD WAS INFECTED

While the infection was easily traced to the public dinner, the source from which the food became infected was at first obscure. Fifty-five of the patients were interviewed and information was obtained from others through their physicians. The facts regarding the kinds of food eaten at the dinner were tabulated and studied. Those who planned and prepared the dinner were very helpful in furnishing information.

The dinner was a church dinner partaken of by about 150 persons, about 125 eating at noon and 45 in the evening. Of the 150 who ate at the hall 85 (57 per cent.) developed typhoid fever.

The bill of fare at the noon meal consisted of chicken pie, mashed potatoes, Spanish spaghetti, baked beans, potato salad containing onions and hard-boiled eggs and served on lettuce, bread and butter, olives, several kinds of pie, cheese, iced tea, and coffee. At the evening meal ice-cream and cake were added to the list. Most of the food was donated, and was prepared at various homes or at the hall. Butter, bread and potatoes were bought from stores whose other customers remained well.

Most but not quite all those present ate chicken pie. Investigation showed that these chicken pies had come from several different households, and it was found that at least three of these various lots had been served to persons who became infected. The gravy served on the pie sometimes came from the pie itself and sometimes from a pan of extra gravy. This could not explain all of the infections.

A considerable number of those infected did not eat the mashed potatoes. The milk used in the preparation of the mashed potatoes and in the coffee came from cows on the farm of one of the women who contracted typhoid fever at the dinner. The farm had previously been free from the disease. No milk was drunk at the dinner.

Next to the chicken pie, the Spanish spaghetti was the dish eaten by the largest number of the persons who became sick. Since the chicken pie was of three or more lots, the spaghetti was the dish eaten in common by the most of the typhoid patients. A few, however, were positive that they had not eaten the spaghetti.

Only a few ate the baked beans. Many did not eat the potato salad. The lettuce leaves on which the salad was served were donated from a private garden which had been watered with city water and fertilized with horse-manure from the barn on the premises. The family had been eating this lettuce and had remained entirely well until two members were infected with typhoid fever at this dinner. Each of the other items, bread, butter, olives, each of several kinds of pie, cheese, iced tea and coffee, could be excluded from being the principal vehicle of infection because it had not been eaten by a considerable number of the typhoid patients. The ice-cream served in the evening was not under suspicion as most of the persons were infected at the noon meal.

From this inquiry the infection could not be traced to any one item of food, as no one kind was common to all cases. It appeared that the typhoid bacilli must have been distributed on the dishes and in various kinds of food.

While there was no common article of food, there was abundant opportunity for the transfer of infection from one kind of food to another. In serving, the

usual procedure was to place the chicken pie, spaghetti and mashed potatoes together on each plate before it was brought from the kitchen. Moreover, the hurried washing of dishes by hand would distribute typhoid bacilli from a heavily infected food over all the dishes and utensils. At first the dishes were washed in cold water and later in hot.

It appeared that the food had most probably been infected by an ambulatory case, or carrier, who had taken an active part in preparing and serving the food at the hall. The number of persons infected suggested that the total quantity of typhoid bacilli in the food was unusually large. While infectious material might have reached the food from the contact of an ambulatory case or carrier during the final preparation and serving, this did not satisfactorily account for the massive infection. It seemed more probable that some item of food which was favorable to the multiplication of the typhoid bacilli had been contaminated long enough before the dinner to permit considerable multiplication. As the evidence did not point definitely to any single item of food as the conveyor of the infection, it became necessary to search for the original source by investigating all the persons who had been active in preparing or serving the dinner.

In searching for the source of the infection it was of considerable assistance to know that typhoid bacilli were present in the food as early as twenty minutes after 11 in the morning. At that time the first patrons of the dinner were infected.

Twenty persons had sufficient connection with the dinner to need special investigation. Sixteen of these were women who were actively engaged in preparing or serving the food. One of the twenty persons did not eat at the hall. The other nineteen ate the food, and twelve of them developed typhoid fever. One of these cases began late in the investigation.

The eleven who had developed typhoid fever were investigated on the supposition that they might have been ambulatory cases at the time of the dinner, and those who remained well were studied as possible typhoid carriers. Two of the group of persons who developed typhoid fever received special attention. The first was a woman who developed typhoid fever on the third day after the dinner. She gave a partial Widal reaction as late as the fifteenth day of her illness, and a distinct positive on the twenty-first. As far as could be learned she had had no opportunity for becoming infected except at the dinner. She supplied no food for the dinner, and her work at the hall consisted principally in washing dishes. The second of these patients gave a suggestive history, since he had suffered several attacks of cystitis and malaise, but these were shown not to be due to typhoid bacilli.

There was nothing in the history of the others who developed typhoid fever to indicate that they were ambulatory cases at the time of the dinner. All of this group of cases could be excluded as possible chronic carriers, as typhoid carriers could not have caused acute typhoid fever in themselves by eating bacilli to which they were constantly exposed and for which they possessed a high degree of immunity.

As the investigation progressed the conviction grew stronger that the infection came from one of nine persons who prepared and served food and had not developed typhoid fever at the time of this part of the investigation. The blood of each was examined and found negative to the Widal test. Two were excluded as possible sources of infection. One of them fur-

nished no food to the dinner and did not help until noon, which was after the first persons eating at the hall had received their infection. The other furnished a pie and a cake and spent a half hour at the hall peeling potatoes. These foods were not under suspicion.

The remaining seven women had taken a very active part. All of them prepared food and most of them brought it from home. All of them took part in serving the dinner. Specimens of urine and feces were obtained in sterile bottles from each and were sent packed in ice to the State Hygienic Laboratory in Berkeley to be examined for typhoid bacilli.

There was danger that the laboratory examinations might not detect the carrier, as typhoid carriers are usually intermittent in the discharge of bacilli. Therefore as much circumstantial evidence as possible was collected at Hanford while the laboratory work was going on in Berkeley. Only two of the seven persons who were under special investigation gave a history of having had typhoid previously, and there were no cases among members of the households of these two until after the dinner, when children of both women came down, showing that people living in intimate contact with them were susceptible to the infection at the dinner. The husband of another one of this group of women had had typhoid fever twenty-two years before, and her daughter fourteen years before, but she herself had been running a boarding-house in which typhoid fever had not appeared. Another had had one case of typhoid in her family many years ago, before coming to California. Two more had not had typhoid fever in their families before the dinner. The daughter of one of these was infected at the dinner, and the mother herself came down with typhoid fever when the investigation was nearly completed.

One member of this group presented a history which made it seem probable that she was a chronic typhoid carrier. Mrs. X had formerly kept a boarding-house in Hanford. Seven and a half years before, in October, 1906, one of her twelve or fifteen boarders came down with typhoid fever. He was sick in the hospital for five or six weeks. The source of his infection was obscure, but his sickness was laid to a well from which he had drunk from three to five days before. A week after this case had appeared another man who was boarding with Mrs. X developed typhoid fever. His illness began Oct. 21, 1906, and kept him in bed for six weeks. Again the source of infection was not clear. He had not eaten away from the boarding-house for a month. The attack was laid to a hotel which he had visited while traveling, two months before. This man is at present in business in Hanford and I was therefore able to get the facts from him.

In March, 1912, two more cases appeared in the boarding-house of Mrs. X. She had moved since the first cases appeared. While she formerly bought milk from a dairy, she then kept a cow. A girl aged 15, who boarded with Mrs. X, came down first and was sick for five weeks with typhoid fever. No possible source of infection was discovered. The girl's mother is living in Hanford and was interviewed. There were about sixteen or eighteen boarders at that time. Four or five days after this case developed, on about March 14, 1912, another boarder, a young man, came down with typhoid fever. He had felt somewhat sick three or four days earlier. He is at present working in Hanford, and when seen, he stated that he had not eaten away from the boarding-house for three months

before his attack. The source of the infection remained undiscovered. He was sick in the hospital for five weeks. His blood was examined at the time and was stated to have given a positive Widal reaction.

The history of four previous cases of typhoid fever among the contacts of Mrs. X made it seem probable that she was a chronic carrier, and was the source of infection, not only of the four boarders, but also of the ninety-three persons infected at the dinner on March 17. Later the proof that she was a chronic carrier was received by telegram from the laboratory. The typhoid bacillus had been isolated from her feces, obtained April 9, and had been definitely identified by cultural and serologic tests. Her urine and the feces and urine from the other persons under special investigation were found to be free from typhoid bacilli. The source of the typhoid infection had been found in a chronic carrier, but a plausible method by which such a mass of infection could enter the food still remained to be discovered.

This carrier, Mrs. X, aged 63, had no knowledge of ever having had typhoid fever. The disease was present in her household thirty-five years before, when a daughter passed through an attack, and Mrs. X may have received her infection then. Unrecognized cases probably play a more important part in the spread of typhoid fever than is generally supposed, and are responsible for a considerable portion of typhoid carriers. In the Hanford epidemic sixteen (17 per cent.) of the ninety-three cases were mild or ambulatory cases and might easily have been overlooked had there been no epidemic. It is not improbable that some persons actually infected in this epidemic developed so few symptoms that they did not regard themselves as sick, and consequently were not discovered in the investigation.

Mrs. X, although not entirely well during recent years, has had no symptoms having any apparent bearing on this investigation. There is no history of gall-stone attacks. The son and daughter of Mrs. X went to the dinner and ate the food, but both escaped infection. This suggests that they may have been immune, owing to previous mild infection with typhoid bacilli from their mother.

Macroscopic agglutination tests were performed with antityphoid serum on the fifth and eighteenth generations of subcultures of the typhoid bacillus from the feces of Mrs. X and also on the well-known Hopkins strain as control. All three of these cultures gave complete agglutination and sedimentation for the dilution of 1:1,000 and some visible agglutination at 1:20,000. The three cultures were nearly equal in agglutinability. The cultures from Mrs. X showed little change in agglutinability between the third, fifth, and eighteenth generations, differing greatly in this respect from the strain previously isolated from a carrier at the State Hygienic Laboratory and found to be only slightly agglutinable in the third generation, but, in the eleventh, equal to the Hopkins strain in agglutinability.¹

The strain of typhoid bacilli isolated from the feces of Mrs. X was tested in the third generation with serum in dilution of 1:50 from two of the typical typhoid cases in the Hanford epidemic. Under the microscope complete agglutination was observed to take place within half an hour.

Serum from Mrs. X was obtained on April 16 and was tested by the macroscopic agglutination test with the Hopkins strain and with her own strain. As controls, serums from two persons who had not had typhoid fever or typhoid vaccination were used. There was no agglutination of the Hopkins culture by any of the serums when the dilution was 1:100. The culture from Mrs. X was partially agglutinated at dilutions of 1:200 by one of the control serums and distinctly agglutinated by the serum of Mrs. X. When the higher dilutions of serum were used there was no agglutination. The test as made is so delicate that the results may be regarded as practically negative, although the serum of Mrs. X had a little more effect on her own culture than did the serum of the controls. The almost complete absence of agglutinins for the typhoid bacillus in the serum from Mrs. X suggests that her infection and immunization had not taken place recently, as there had been time for the Widal reaction to disappear. In this respect the conclusions in the laboratory confirmed the opinions based on the history of typhoid fever among her contacts.

THE MANNER IN WHICH THE INFECTION REACHED THE FOOD

The source of the infection had now been found to be Mrs. X, but the method by which the infection entered the food remained to be investigated. She helped serve the dinner, cutting the bread, waiting on table, and helping a little in the kitchen. She undoubtedly came in contact at the hall with the food or dishes of a considerable number of persons, and, while this could possibly explain the outbreak, it seemed improbable that the small number of bacilli which could easily be distributed in this way would infect so many people. This was especially true as Mrs. X did not reach the hall until about 10 o'clock in the morning and there was little time for incubation of typhoid bacilli in any of the foodstuffs before the first persons were infected, at twenty minutes after 11. The one article of food with which Mrs. X came in contact before the dinner was the Spanish spaghetti. She had prepared this dish at her home, up to the point of the final baking, which took place at the hall just before the dinner. This final baking would appear at first glance to justify the elimination of the spaghetti as the dish responsible for conveying the infection.

The Spanish spaghetti was prepared as follows: On the day before the dinner the spaghetti was boiled in water. Then it was washed and separated with city water running from a tap. On the same day a Spanish sauce was made out of a quart of milk, two cans of tomatoes, butter, seasoning, cooking soda, and the strained liquid in which dried peppers had been boiled. Probably a little flour was added for thickening. These ingredients were put together and cooked. On the day of the dinner, at about 10 a. m., the spaghetti and the sauce were mixed in a large dish-pan and covered with cheese. The weather was warm and would have been conducive to the multiplication of bacteria. The spaghetti arrived at the hall between 10 and 10:30 a. m. and was put into the oven of a gas stove immediately. The late arrival of the spaghetti caused the women to fear that there would not be sufficient time for the proper baking of this important item on the bill of fare. When the first patrons arrived they were served from the upper and

1. Sawyer, Wilbur A.: A Typhoid Carrier on Shipboard, THE JOURNAL A. M. A., May 4, 1912, p. 1336.

warmer layers of the spaghetti, as it was thought that the deeper portions would not be as hot as desired.

The evidence would be strong that the spaghetti carried the infection if it could be shown that this dish was a good culture-medium and was not sterilized by the baking. Experiments were undertaken at the State Hygienic Laboratory to clear up these two points. A dish of Spanish spaghetti was prepared as nearly as possible according to the methods used by Mrs. X. The spaghetti and sauce were prepared separately. Some of the sauce was put in flasks and sterilized and set aside to be tested for its properties as a culture-medium. The remainder of the sauce and the spaghetti were inoculated with a broth culture of the typhoid bacillus of the strain from Mrs. X. The following day the sauce and spaghetti were thoroughly mixed in a small dish-pan and covered with one pound of grated cheese. The dish was not as large as the one prepared by Mrs. X and would therefore be more easily heated through. This mass of Spanish spaghetti was 5 inches deep and ranged from 9 to 13 inches in diameter. The oven of an ordinary gas range was heated to baking temperature and the dish of spaghetti was put in. After seven minutes the door was opened for an instant and it was noted that the cheese had melted. After fifteen minutes the dish was removed from the oven. The surface was not properly browned and the temperature in the middle of the spaghetti had risen only one degree above room temperature (from 16 to 17 C. or 60.8 to 62.6 F.). In the following half hour, while the dish was standing in the room, the temperature at the middle rose to 21 C. (69.8 F.) as the heat gradually penetrated to the inner portions. Cultures taken from various depths all developed colonies of typhoid bacilli.

A large hot-air sterilizer was then heated and kept between 160 and 170 C. (320 and 338 F.). The pan of spaghetti was introduced and subjected to this heat for thirty minutes. When the dish was removed the surface was of a golden brown color. The appearance and aroma suggested that the spaghetti was thoroughly cooked and very hot. The temperature near the top was 54 C. (129.2 F.) and at the middle 23 C. (73.4 F.). Ten minutes later the temperature at the middle was 24 C. (75.2 F.) and the dish was then returned to the oven. Cultures taken at various levels showed that the typhoid bacilli were alive even close to the surface.

In the next baking the oven was kept at temperatures ranging between 207 and 214 C. (405 to 417 F.). After half an hour the pan was removed. The surface was dark brown and the points sticking up from it were charred. The liquid around the margin was boiling vigorously and the whole dish was sizzling. The temperature just under the surface was 83 C. (181.4 F.). At the middle it was 28 C. (82.4 F.) and near the bottom it was 48 C. (118.4 F.). An hour later the temperatures had become nearly equalized and were 46 C. (114.8 F.) near the top, 42.5 C. (108.5 F.) at the middle, and 43 C. (109.4 F.) near the bottom. This showed that the interior of the dish did not reach even a pasteurizing temperature.

Cultures taken at the surface soon after the pan had been removed from the oven showed no typhoid colonies and very few of other kinds. Cultures taken at a distance of half an inch from the surface showed a few colonies of the typhoid bacillus, most of the organisms having been killed. Cultures from a depth

of 2½ inches showed abundant colonies of typhoid bacilli. In these cultures the typhoid colonies were identified by their appearance on Endo medium and Russell medium and also by agglutination by anti-typhoid serum.

In this way it was shown that sterilization of the pan of spaghetti at the dinner in Hanford was not only improbable but practically impossible. The mass of the spaghetti there was much greater than in the experiment and conditions were less favorable for thorough baking.

The thickened sauce, consisting so largely of milk, was suspected of being the culture-medium in which the multiplication of the typhoid bacillus took place. Ten c.c. of the sauce, which had been set aside when the experimental dish was prepared, was put in a test-tube and sterilized in the autoclave. The same amount of sterilized milk was used for comparison. Each tube was inoculated with 0.0001 c.c. of a twenty-four hour broth culture of the typhoid bacillus isolated from Mrs. X. The tubes were thoroughly shaken and then incubated at 37 C. (98.6 F.). Table 3 shows the number of bacilli present in each cubic centimeter of the sauce and the milk at the time of inoculation, and after twelve and twenty-four hours of incubation.

TABLE 3.—COMPARISON OF THE SAUCE AND MILK AS CULTURE MEDIUMS

Hours of Incubation at 37 C.	Number of Bacilli in Each Cubic Centimeter		Percentage Increase in the Number of Bacilli	
	Sauce	Milk	Sauce	Milk
0	850	1,250	0	0
12	25,000,000	57,000,000	2,940,000	4,560,000
24	74,000,000	56,000,000	8,700,000	4,480,000

From Table 3 it is readily seen that the sauce is a good culture-medium for the typhoid bacillus, although it is somewhat inferior to sterilized skim milk, as is shown by the less rapid multiplication in the sauce during the first twelve hours.

The laboratory experiments completed the explanation of the Hanford outbreak by showing that the sauce used in making the Spanish spaghetti was a good culture-medium and that the dish had not been sterilized after leaving the house of the typhoid carrier.

Moreover, it was demonstrated that cooked dishes must be considered as possible conveyers of infection unless it can be shown that the method of cooking would produce complete sterilization. The slowness with which heat penetrates dishes like the Spanish spaghetti shows that very prolonged heating would be necessary for sterilization of large dishes of such food. Ordinary baking merely incubates the interior of these masses of food.

THE PREVENTION OF SECONDARY CASES

April 6, Dr. C. L. Scott, the city and county health officer, requested the State Board of Health by telegraph to take charge of the vigorous clean-up campaign which had been recommended as necessary to prevent secondary cases. Under the immediate supervision of Sanitary Inspector E. T. Ross of the State Board of Health, eight men inspected the premises of the entire city and ordered such alterations as were necessary.

The work was finished on April 24. The city and county officials and the individual citizens cooperated with the inspectors to such an extent that in no instance was it necessary to prosecute a property owner in order to have a nuisance abated. The city

continued the employment of one sanitary inspector after the campaign was finished.

Secondary cases were almost completely absent up to the time of the preparation of this report, three months after the dinner which caused the epidemic. One case of typhoid fever was reported, and the date of onset was given as May 10. The attending physician could discover no relation between this case and those infected at the dinner. No other cases have been reported.

In order to lessen danger of further infections from this carrier, various precautions were laid down by the State Board of Health and agreed to by Mrs. X in writing.

CONCLUSIONS

1. The source of infection in the ninety-three cases of typhoid fever in the Hanford epidemic was a typhoid carrier who prepared food served at a public dinner.

2. The vehicle of the infection was a large pan of Spanish spaghetti prepared by the carrier. This dish was baked after it had been infected, but this baking was shown by laboratory experiments to have incubated the bacteria instead of sterilizing the food. Certain customary methods of cooking are thus shown to be inadequate as a protection against infection.

3. The incubation period in the majority of the cases in this epidemic of typhoid fever proved to be shorter than the time usually regarded as the minimum. The first case developed three days after infection. More cases showed their first definite symptoms six days after the infected food was eaten than on any other one day.

4. The ways in which a carrier may transmit infection are so varied and so numerous that attempts at the control of mere channels of infection will not offer sufficient protection. Those who were suspicious of the raw salad at the dinner in Hanford and ate the freshly baked spaghetti turned from a safe dish to one which was heavily infected. The best protection against carriers will come through thorough investigation of the source of infection in every case of typhoid fever. When carriers are discovered, they can be advised and controlled.

5. Until there are more trained epidemiologists on a full-time basis among state and local health officials, the danger from carriers will not be noticeably diminished, and the individual will find in antityphoid vaccination his best protection against infection from carriers.

Labor Camp Sanitation.—The New York State Department of Labor has promulgated a set of rules and regulations governing the sanitation of living quarters and camps. The most important of these rules are:

The roof and walls of living quarters must be water-tight. The floor of every room used for sleeping purposes must be built of wood, asphalt, or cement. If built of wood, it must be raised at least 1 foot from the ground and the boards must be planed, tongued and grooved and at least $\frac{3}{8}$ inch in thickness. If built of asphalt or concrete, it must be laid on a solid foundation other than earth and must be at least 2 inches in thickness. All such floors must be given a smooth, non-absorbent finish.

In every room used for sleeping purposes there must be provided a minimum of 400 cubic feet of air for each person over 14 years of age, and 200 cubic feet of air must be provided for each child below this age. All living quarters other than tents must have at least one window opening directly to the outer air. These windows must be easily opened and have a minimum area of 4 square feet. Ventilation must be adequate. No bed or bunk may be placed one above the other. Finally, all labor camps must be provided with living quarters, kitchen and dining room accommodations under shelter and plenty of water for drinking and bathing purposes must be furnished in every camp.

BLOOD TRANSFUSION BY THE SYRINGE CANNULA SYSTEM*

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The time allowed for a paper under the present circumstances will not permit of a full discussion of the subject in hand. I therefore omitted a summary of the literature, the excellent work of others in this field, problems of technic, questions of accidents, etc. I will confine myself to some of the principles involved in blood transfusion and speak of some of its applications.

When one considers the many facts about the blood, not generally recognized, which are known, and the many facts yet to be learned, one cannot help but realize the complexity of this tissue. Many diseases produce changes in quantity and quality of the blood. Changes in quantity and quality of the blood are responsible for many pathologic conditions. Failure on the part of the blood to modify its quality properly and adequately to meet the required demands in the various conditions is frequently responsible for the existence of disease, especially infections. It is only by a thorough study of this complex tissue in the normal and by a study of this tissue under pathologic conditions that one may obtain a clear conception of the possibilities of blood therapy. Further studies of the mode of operation of substances and elements of the blood in disease will perhaps suggest to us possibilities in modifying the blood of a donor or patient to meet the needs of the case and make more potent the agencies involved in overcoming disease. These studies are necessary not only that we may know when and how to apply blood therapy but equally important that we may know when not and why not to employ it.

Permit me to take up with you some of the conditions in which blood transfusion therapy may be considered.

Aplastic Anemia.—A disease usually of young adults, short, febrile course and always fatal. The anemia is progressive with no remissions of the disease, and the termination is usually in hemorrhage. In this disease leukoblastic and erythroblastic activity becomes completely and permanently paralyzed. The introduction of fresh blood is wholly inadequate to modify favorably the course of the disease. This statement is based on three cases in my own experience with a support of the literature among the reliable authors.

Splenic Anemia with Hematemesis.—In this group we may for our purposes include Banti's disease. In many cases syphilis plays a prominent rôle. Where syphilis prevails and the anemia is in excess of the blood lost, transfusion will be of little aid until the patient has received antisiphilitic treatment (case report¹). After receiving such treatment, transfusion in severe cases is specific. Following the combined therapy splenectomy deserves respectful consideration.

Gastric Ulcer with Hemorrhage and Anemia.—In traumatic hemorrhage or hemorrhage from ulcer, nature provides two factors of safety in checking

* Read before the Section on Practice of Medicine at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Lindeman, Edward: Blood Transfusion, THE JOURNAL A. M. A., March 28, 1914, p. 993.

it: (1) a fall in blood-pressure, and (2) a decrease in coagulation time. The decrease in coagulation time is brought about by dilution of the blood with fluid of the tissue. This fluid carries with it tissue extract. Tissue extract reduces coagulation time. If transfusion be contemplated it should preferably be done after all bleeding has ceased, and a sufficient time allowed for a crust to seal over the bleeding area. If both operation and transfusion be done, transfusion should preferably be done first whether the patient is actively bleeding or not. Anesthesia and operation should immediately follow. The patient will bear the anesthesia well, the shock of operation will be prevented; sensory and other reactions which occasionally follow transfusion never become manifest, and a poor surgical risk is converted into a good one. My experience is that when the hemorrhage is profuse and several occur within twenty-four or thirty-six hours, the ulcer is likely to be a deep one. These are naturally more liable to perforate. In these cases transfusion and operation should be done without delay.

The treatment of severe hemorrhage by blood transfusion is specific. The results when proper transplantation is accomplished are nothing short of brilliant.

Alcoholic Cirrhosis of the Liver with Severe Secondary Anemia.—The liver cirrhosis is no contra-indication. The results are good. Ascites may follow transfusion, but this ascites clears up later. My patients have all done well even when syphilis was associated. In liver disease Whipple found a diminution in the fibrinogen of the blood. The purpuric eruptions and also hemorrhages which not infrequently accompany the disease may thus in a measure be easily accounted for. Where varicosities of veins prevail both factors may be operative in causing hemorrhage and anemia. Hence the rational procedure for the relief of the condition is the transfusion of whole blood.

Acute Leukemias.—I have had no success in the treatment of this disease, in either the proliferative or destructive forms, with or without hemorrhage.

Hemophilia.—A family disease following the law of Nasa. Here we encounter a condition of the blood which permits of a greatly delayed coagulation time, the blood failing to clot in over one hour. In the circulating blood fibrinogen, calcium salts, prothrombin and antithrombin are constant constituents. Antithrombin holds the prothrombin in combination and prevents its conversion or activation into thrombin. When blood is shed the disintegration of platelets furnishes material called thromboplastin which combines with the antithrombin and the prothrombin is liberated. Prothrombin freed is rapidly changed to thrombin and in the presence of calcium salts converts fibrinogen into fibrin (Howell). From the most recent researches of Howell in hemophilia, the condition is associated with a decrease of prothrombin which necessarily means a relative increase of antithrombin. In this disease two conditions are corrected by blood transfusion: (1) prothrombin is supplied; (2) the lost blood is replaced. Human blood-serum in sufficient quantities will supply enough prothrombin to stop the bleeding. Blood-serum will not replace the formed elements of the blood lost. Hence, in severe cases blood transfusion is the measure of choice and should be performed during the active stage of bleeding. In some cases it might be consid-

ered as a prophylactic after all bleeding has ceased. After transfusion the coagulation time is materially reduced but, curiously enough, does not remain constant. A case may illustrate this point:

A typical case in the series of Dr. W. Gilman Thompson, Bellevue Hospital, in a man, aged 29, with multiple hematoma in joints, loose tissues of the neck and floor of the mouth. His life was endangered by strangulation May 22, 1913, coagulation time over 45 minutes; May 23, 230 c.c. was transfused; May 24, coagulation time 17 minutes; May 25, coagulation time 19 minutes; May 25, 200 c.c. was transfused; May 28, coagulation time 12 minutes; May 29, coagulation time 14 minutes; May 30, coagulation time 15 minutes; June 2, 200 c.c. was transfused; June 4, coagulation time 8 minutes 10 seconds. Patient had no recurrence of bleeding since the second transfusion until one year later, when he came to my office with a hematoma of the left wrist. His coagulation time was then a little over one hour when an imperfect clot had formed. He was then transfused again with good result. Dr. Crile, in a personal talk, informed me that some of the cases in his experience remained in a normal condition for several years after treatment.

Simple Anemia of Grave Degree of Unknown Cause.—Most common in girls and young women between 10 and 20 years of age, frequently fatal. The coagulation time is slightly delayed, menstruation is irregular and at times a little excessive. Epistaxis is occasional. The anemia is frequently fatal and yet shows none of the characters of pernicious or aplastic anemia or hemophilia. In cases in which the usual forms of treatment have been exhausted with no improvement, striking results are obtained with blood transfusion. After overcoming some of the anemia by blood transfusion, the patient, who has previously shown no hematopoietic function, begins to make new blood. However, the anemia must be overcome to a considerable degree before the patient is capable of blood regeneration. Not only does the new blood correct the pathologic condition in part but apparently stimulates hematopoiesis. We may well apply here the maxim, *Ex nihilo nihil fit*, "Nothing can be made out of nothing." This stimulation is probably due to the increased nutritional condition of the hematopoietic organs themselves, which nutriment furnishes material from which new blood may be made. Once the patient assumes good hematopoietic activity the road to recovery is rapid and cure is complete.

Postoperative Cholecystotomy (where bleeding from the wound cannot be controlled).—Human serum in large quantities may help. In some cases, however, this may not help and transfusion of blood is necessary. In severe cases it may be necessary to transfuse every day or every other day or every three or four days according to the variation in coagulation time and variations in the blood lost. If the patient's blood coagulation time is maintained within eight minutes all bleeding will cease; but at this point the patient remains at a low level of safety. Hence, though bleeding has ceased, a lower coagulation time should be aimed for. A severe anemia from preceding illness may be present and a relatively small hemorrhage can produce grave symptoms. Whole blood adequately satisfies all the necessary needs of the case. According to Falta, also King, bile pigments have considerable affinity for calcium; when the pigments appear in the circulation the heart muscle rapidly gives up some of its calcium. In consequence the heart action is impaired. In this condition, as

well as in some cases of pernicious anemia, I usually use Locke's modified Ringer's solution, without the dextrose, for improving, if possible, this cardiac tone. The solution is used in place of saline.

Carcinoma and Sarcoma.—The fact that malignancy is common in some families and absent in others, and the fact that tumors are not transplantable in all individuals of a species, would lead one to conjecture the possibility that inhibitory substances may be present in some individuals and that these substances reside in the blood. Crile has reported a cure of sarcoma in a dog by blood transfusion from an immune animal. In my experience thus far I have no evidence one way or another. The operative risk, as in many other conditions, is undoubtedly diminished by blood transfusion.

Malnutrition.—The life of a starving animal cannot be maintained by the transfusion of blood from a normal, well-fed animal. The bulk of the energy represented in the blood is in a potential form. That which is kinetic is relatively small. Hence, one cannot hope for much in cases of malnutrition in infants. I have had a little success in this field, but I feel that what virtue it may possess must lie in its stimulating quality. Of course, when anemia is associated, the results in some cases should be good. In the majority of cases of malnutrition in infants, in spite of the pallor and emaciation, the red cells and hemoglobin approach very close to normal, sometimes even higher. This is a little difficult to understand. There may be a reduction in volume of the blood due to dehydration of the tissues, and the anemia may be masked by concentration. This, however, is a theoretical point, and deserves no place here.

Purpura Hemorrhagica.—The condition may be primary, or may be secondary to some accompanying or preexisting disease. We may divide them conveniently for our purposes into four groups: (1) cases associated with diminution of platelets; (2) cases associated with diminution of fibrinogen; (3) cases associated with diminution of prothrombin; (4) all other cases.

Groups 1, 2 and 3 are either improved or cured by blood transfusion. As to Group 4, the condition or course of the disease in many of the cases in this group is not modified.

Sepsis.—I must here cite one case, a patient referred to me through the kindness of Dr. F. S. Meara of New York:

A. H., aged 11 years. Diagnosis: Rheumatic fever with malignant endocarditis. Child is very ill, emaciated, very weak, anemic; hemorrhagic mucous membranes; petechiae on skin and blood in stools. Systolic murmur of mitral insufficiency; liver and spleen just at the level of umbilicus, and some edema of extremities. For the past eighteen months child has been ill with the following diseases in succeeding order: asthma, tonsillitis, rheumatic fever, bronchopneumonia, diphtheria, otitis media, mastoiditis with involvement of sphenoid bone, and is now suffering with the disease mentioned above. In spite of repeated negative blood-cultures, it was felt that the child had a blood infection, from some obscure focus, probably the heart valves.

July 18, 1913: Strong positive complement fixation test to *Streptococcus viridans* (Research Laboratory, Department of Health, New York); 280 c.c. of blood was transfused in median basilic vein from father. Time three minutes. One hour later temperature 101 F.; normal in evening.

August 1: Second transfusion; 360 c.c. of blood was transfused from father. Time from beginning to end of operation twelve minutes. No reaction.

August 8: Third transfusion; 260 c.c. of blood was transfused from father. No reaction. Mastoid wound previously showed little tendency to heal, but now shows increased granulations and decreased discharge.

August 15: Fourth transfusion; 220 c.c. of blood was transfused from father. No reaction.

August 21: Red blood-cells, 2,700,000; hemoglobin, 70 per cent.

August 22: Fifth transfusion; 260 c.c. of blood was transfused from father. Fifteen minutes later there was a slight general urticaria. After this transfusion child made rapid progress in strength and increase in appetite.

August 29: Sixth transfusion; 280 c.c. of blood was transfused from father. Fifteen minutes after this transfusion child developed a general urticaria. First transfusion was followed by chills and slight temperature. No chills and no rise of temperature followed the succeeding transfusions.

September 5: Child began to go out in an automobile daily. Her course has been one of continuous progress ever since. Convalescence dates from August 29, the day of the last transfusion.

November 22: Child is now practically well save for occasional attacks of asthma for which she is sent to a warmer climate.

December 1: Condition good.

Aug. 1, 1914: Condition excellent. Child weighs 90 pounds. No recurrence of the disease.

In the analysis of the case of A. H., and in the explanation of the successful results obtained, I desire to advance the following statements which I present in the form of a theory:

In this case it might be said that three prominent conditions prevailed:

1. Chronic sepsis.
2. A severe anemia secondary to sepsis.
3. Multiple purpuric hemorrhages secondary to sepsis.

[From observations in this case and from observations in nine other cases of chronic sepsis, I am convinced that blood of a normal healthy individual contains bactericidal elements or elements that inhibit bacterial growth, that possess considerable potency. These elements when introduced convey some degree of passive immunity.

THEORY

"This immunity follows the law of passive immunity and is greatest at the time of introduction of blood, and gradually disappears with time either by elimination or modification. If this be true the introduction of fresh blood will inhibit septic processes for a time at least until the bactericidal or inhibition substances introduced become impotent. At this point bacteria may assume their previous activity and the condition is unrelieved. However, if blood is introduced repeatedly, this bacterial activity will be checked in part.

The parallelism of anemia and low resistance to infection is a well-known fact.

When a sepsis produces an anemia a vicious cycle presents which prevents the host from developing active immunization to the infection.

If we assume a certain threshold necessary in the host, in terms of red blood-cells and hemoglobin for the production of an active immunity, then repeated transfusions will check septic processes and overcome the anemia to a degree that will enable the host to develop his own active immunization which will destroy the organism causing the disease."

It takes more than one swallow to make a summer. And, in support of my contention I have had nine other cases of sepsis in which there were two deaths.

In one case in which death occurred a child of 6 years had appendix abscess and spreading peritonitis and gangrene of the cheek. In the other case a man aged 39 had a streptococcus septicemia. The blood culture yielded 200 colonies per 3 c.c. of blood. These cases will be published in detail elsewhere. The literature of many experimental workers would seem to bear out this contention. Von Behring, Fodor, Nuttall, Nissen, Buchner, all showed that fresh normal blood and blood serum will kill bacteria in a reagent glass. Lemaire and also Buxton found that after the infection of pathogenic micro-organisms directly into the circulation there is first a reduction in their number followed later by an increase. It is supposed that the natural antibactericidal forces of the serum and leukocytes take up the destruction of the bacteria until the former are exhausted, and from this time proliferation will take place without hindrance. In typhoid infection it would seem that the first organisms which reach the circulation are killed. In this destruction there is a great loss of bactericidal agencies, so that continued invasion results in general infection. Evidence is abundant that the blood is endowed with a natural protection against the invasion of bacteria, and in most of us it is only when infected by an organism of high virulence that we are overwhelmed. If, however, by the removal of the natural immune substances through long illness, alcoholism, bad habits, etc., an individual may be wholly incapable of warding off infection, even of low grade virulence, and chronic sepsis may easily ensue. The increased bactericidal power of the serum which develops in immunization or infection is an index of the increased resistance of the individual against infection. If this be true the reverse must be true, and where there is no bactericidal power in the blood there is no resistance to infection. In streptococcus and staphylococcus infections, protective serums have been obtained in laboratory animals, but the quantity required for use in man at the present time precludes the possibility of application. The defense of the body against streptococci depends on the power of the leukocytes as well as the opsonin and other bactericidal substances of the serum. Hence the bactericidal power *in toto* resides in the whole blood.

40 East Forty-First Street.

ABSTRACT OF DISCUSSION .

DR. G. M. DORRANCE, Philadelphia: The published results from transfusion in pernicious anemia, and my own results agree with them, have not been favorable in cases in which only one transfusion of a large amount is performed. Exceptional cases of course occur. We have had two cases of cure, both in young subjects, and several cases in which transfusion was successful in the first instance but was followed by death several months later. The syringe method of which Dr. Lindeman is an advocate seems to be destined to supersede the direct connection between artery and vein and from vein to vein. This method has been used for several years by Drs. Cooley, Edwards and others, the difference being that they use a larger syringe. We have not had experience in the treatment of chronic infections by frequent transfusions, but in acute infections the use of blood-serum or one large transfusion has not altered the course of the disease in any of our cases. In most melena cases, serum, foreign or human, usually controls the bleeding. In a few very severe cases transfusion is indicated. Too much care cannot be exercised in the selection of the donor in order to rule out syphilis, tuberculosis, etc.

DR. S. ADOLPHUS KNOPF, New York: Will Dr. Lindeman tell us what has been his experience with tuberculosis cases and how the patients felt after transfusion?

DR. A. E. JAFFIN, Jersey City: Five years ago I transfused a patient with pernicious anemia by the cannula method, and although the patient died three days later the hemoglobin rose 20 per cent. Coincident with this rise in hemoglobin there was cardiac distress that stopped us from going higher. As an intern I recall cases of malignant endocarditis that were repeatedly transfused shortly after Dr. Crile had revived the subject. The success we had then was not as marked as Dr. Lindeman's now. In one case there was a streptococcus invasion of the mitral valve.

DR. E. LINDEMAN, New York: In the technic, specially devised cannulas are painlessly inserted into veins of the donor and patient, without skin incision. About 15 syringes are employed. No syringe is used a second time until thoroughly cleansed. One operator manages the syringe of the donor, another that of the patient. One syringe is being filled while another is being emptied. A little saline is allowed to trickle through the patient's cannula every now and then to prevent the possibility of any coagulation in the cannulas. The syringes are passed from donor to patient in rapid succession until the desired quantity of blood has been transfused. The system thus operates as an artificial human heart. It requires from six to twelve seconds to fill and empty a syringe. The largest quantity I have taken from one donor in one sitting is 1,500 c.c.; the time required was fifteen minutes; 30 c.c. of saline was used. The coagulation time of blood carefully drawn into a syringe is never less than five minutes. Hence, no change can take place in the blood during the transfer, for the entire blood-mass, regardless of the amount, is outside the human body for a period of less than twelve seconds. In speaking of sepsis, I tried to emphasize the fact that we have, in the circulating blood of normal healthy persons, natural bactericidal substances more powerful than any substances in the pharmacopeia at present capable of being injected into the circulation for the treatment of many infections. Undoubtedly, the degree of natural immunity will vary with many persons, as Dr. Park has shown in the protection from diphtheria; some possess it, others do not. In the selection of donors, those who have proved successful in septic cases are used for similar cases. For the treatment of typhoid fever donors are kept immunized during the typhoid fever season. In answer to Dr. Knopf's query concerning transfusion in tuberculosis, I must beg to decline to make a statement at present. The work is being pushed as rapidly as possible and a report will follow in due time. I have purposely omitted the subject of pernicious anemia, yet there is perhaps no disease that presents itself more frequently to one engaged in the field of blood therapy. Cases referred to me from time to time now make a large series. These have been subjected to a critical analytic study. Because there is so much to be said on this subject I have preferred not to enter on it at this time. When the patient, however, has reached a critical condition, when all other forms of treatment have been exhausted, there is no therapeutic measure known that has any parallel in efficacy in robbing the disease of much of its terrors as blood transfusion when properly applied.

Characteristics of the Health Movement.—The New Health is thus an index of our civilization, a composite result of all our well-being and a tremendous asset for the advancement of that well-being. Health is economic. Sound men cannot be exploited; and for that reason, if for no other, I greet with enthusiasm the advent of the New Health. Health is moral. Sound men will not be unjust and for that reason I salute the era of the New Health. Health is civic. Sound men will eliminate poverty and that of itself should make us all sanitarians. Sound men will learn to do without jails, recognizing that so-called criminals are properly candidates either for an educational reformatory or for a custodial hospital, and therefore again I turn gladly toward the dawn of the New Health.—Edward T. Devine, *Journal of Outdoor Life*.

ACUTE MYELITIS, SECONDARY TO PERI- RECTAL ABSCESS, DEVELOPING A FEW HOURS AFTER SEVERE FRIGHT *

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Fright has been considered, especially by German authors, a cause of organic paralysis, and cases with this etiology are reported in the older literature. It is probable that many of these cases were instances of functional paralysis and not organic. In 1903 I had the opportunity of studying a case in which a struggle with burglars was followed in two days by paresthesia of the lower limbs of sudden onset and some days later by motor and sensory paralysis of these limbs and then death. Pus within the abdomen extending from the rectum and severe myelitis were found. The fright may have had no connection with the paralysis, but on the other hand it may have disturbed the circulation in the spinal cord and in connection with the exertion caused by the struggle have rendered the cord more liable to infection.

H. E. S., white, first came to the nervous dispensary of the University Hospital, Nov. 9, 1900. He was a railroad conductor, aged at that time 35 years. While coming from Omaha he had become paralyzed in the right side of his face after he had been sitting by an open window. The paralysis was severe, and the entire right side of the face was affected. He made a complete recovery from this paralysis.

April 22, 1903, he returned to the nervous dispensary, when the following notes were taken: He had been perfectly well since he had had the facial palsy. He denied venereal disease. He had been married five years, from 1891 to 1896, but his wife had never been pregnant.

During the night of April 17, 1903, he was attacked while in an eating-house. He was the proprietor of this restaurant and at 1 o'clock in the morning three men entered his place of business and tried to rob him. With the assistance of another man who was in the place, he succeeded in driving off his assailants and it is very certain that he was not injured bodily in any way, although he was very much excited.

During the afternoon of April 19 he was sitting by a window in his house. He had been perfectly well until this time. While he was sitting by the window the man who had assisted him in expelling the robbers passed and the patient's thoughts were directed to the attempted robbery. Soon after the man passed he rose from his chair but noticed that both of his legs were asleep, as he expressed it, and he walked therefore with some difficulty. The paresthesia has persisted until the present time. When he first experienced the paresthesia his feet and right leg seemed numb, and gradually the numbness spread to the knee on the left side and to the hip on the right side, implicating also the penis, scrotum and gluteal region. The rest of his body seemed normal. He knows when he has passed urine or when the rectum should be emptied, but he cannot feel the passage of the urine or feces. He has not had involuntary micturition or defecation. He has not had any sexual desire or seminal emission since his symptoms first appeared, but the time has been short. He tires very readily and needs to make more effort to perform voluntary movements. The station is fair even with eyes closed.

Standing on the right leg alone is not so easy as standing on the left leg alone. He moves all the joints normally. He can place his heel at any desired point with fair accuracy. Objective sensation in its different forms is little if at all affected; when tested he occasionally gives an incorrect

answer, but soon corrects himself. He complains that he feels as though he were walking on felt and that he does not seem to have shoes on.

Both patellar and Achilles tendon reflexes are normal. In testing the Babinski reflex the large toe seems to go up first and then to go down. The reactions of the irides are normal.

April 27: The Babinski reflex is positive on each side.

May 2: Since Sunday, April 19, the patient had been able to walk without difficulty and came to the dispensary, although his gait was slightly ataxic. The toes of each foot had been forcibly extended from irritation of the sole of the foot. He had no marked disturbance of gait until Thursday morning, April 30, when, about 11 a. m., he fell to the floor but was able to pull himself on the sofa. He had not passed urine since half past five of that morning. So soon as he climbed on the sofa he began to have pain in the lower part of the abdomen. Dr. Lindauer was sent for and catheterized the patient. The man had not had any pains in the lower limbs at any time although he had pain in the lumbar region. Bowels have not moved since April 30.

About 2 p. m., April 30, the patient succeeded in rising from the sofa and by supporting himself was able to pass into another room on the same floor. He sat in a chair three-quarters of an hour. Later he walked into the front room and walked several times about the room until he was brought to the University Hospital about 6 p. m., April 30.

Friday, May 1, the morning after admission to the hospital, he was able to stand and he walked around the bed. Dr. Nisbet, about 3 p. m. of this day, had the patient get out of bed and stand by the side of the bed, supporting himself slightly with one hand. As he was unable to void urine while standing, he was catheterized.

Resistance to passive movements in the lower limbs was nearly normal, and he could flex and extend the leg and thigh even when these movements were resisted. The patellar reflex was exaggerated, especially on the right side. Ankle-clonus and Babinski reflex were distinct and both were more marked on the right side. Tenderness to pressure over the vertebrae was not felt.

Condition May 2: The lower limbs are not at all atrophied but are completely paralyzed, so that there is scarcely any movement in the toes or hips. The patellar reflex on each side is not so prompt as it was yesterday; it is about normal on the left side and slightly below normal on the right side. Ankle-clonus is persistent and typical on each side, but more pronounced on the right side. Babinski's reflex is very distinct on each side; on the right side the movement of the big toe upward is typical and slow; on the left side the movement of the big toe upward is of the same quick character as it was last week. The lower limbs are cool to the touch and are spastic.

Tactile sensation is much impaired in the lower limbs, beginning about 2 or 3 inches below a line passing through the umbilicus. The outer part of the right thigh and the feet are almost anesthetic. Pain sensation is acute in the lower limbs except on the outer side of the right thigh, but is not so acute as in the upper part of the trunk. Sensation for temperature is much impaired in the lower limbs and over the abdomen below the umbilicus, but the sensation seems to vary during the examination. The abdomen is very rigid and painful to slight touch.

The movements of the upper limbs are free and the motor-power is normal. The grasp of each hand is normal. Sensation for touch, pain and temperature in the upper limbs and face is normal.

The reaction of the iris to light and in convergence is prompt in each eye. The movements of the eyeballs are normal in all directions. The tongue is protruded in the median line. The muscles of the facial and motor trigeminal supply are normal.

May 3, 2 p. m.: The lower limbs are completely paralyzed. The patellar reflex is absent on each side even on reinforcement. Babinski's reflex is present on each side. Ankle-clonus is not obtained on either side. The abdomen is rigid and tender. Sensation for touch in the right lower limb is lost on the outer side below the crest of the ilium, on the anterior side below Poupart's ligament, on the inner side

* Read before the Section on Nervous and Mental Diseases at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

below the patella, and on the posterior side below the popliteal space. In the left lower limb tactile sensation is impaired below the knee. Pain sensation in the right lower limb is lost on the outer side below the trochanter, and on the inner and outer surfaces of the leg below the patella, and is impaired in the rest of the right lower limb. It is lost in the outer part of the left leg 2 inches below the patella to 2 inches above the ankle.

Heart and lungs are normal.

May 5: The upper limbs are not at all affected. Respiration is entirely costal; the abdomen is distended. Since yesterday morning the patient has been having intense pain over the trunk back and front from about 4 inches below the nipples to the inguinal region. The whole spinal column from below the spines of the scapulae is very tender to pressure. Sensation for touch and pain is entirely lost in the lower limbs and abdomen as high as a line about 2 inches below the umbilicus. Patellar reflex and Achilles tendon reflex are completely lost on each side. Babinski's reflex is still very distinct on each side. The man has frontal headache. He complained of a sensation of fulness in the bladder which was removed by catheterization.

Death occurred May 9, 1903.

The necropsy was performed by Dr. William S. Wadsworth, coroner's physician. He reported that the findings showed such clear evidence of gradual extension from the region of the rectum that he gave as cause septicemia by extension of infection from the rectum. Dingy greenish pus was found in the tissues about the rectum with emphysema and cellulitis extending to the buttocks above the brim of the pelvis, implicating the retroperitoneal space and the lymph-glands of the abdomen, extending as high as the pleura, following the nerves to the spinal cord, and causing general peritonitis. There was evidence of beginning pleurisy. The bladder did not contain pus.

Dr. J. S. Evans, Jr., reported, May 16, 1903, that intradural cultures were negative, subcutaneous cultures were contaminated, but a culture taken the day before death from the area of cellulitis of the buttocks showed the presence of the *Streptococcus pyogenes*.

My findings in the spinal cord were as follows: Lumbar Region: A section from the midlumbar region showed much softening although it was possible to distinguish white from gray matter. The anterior and posterior roots stained deeply by Weigert's hematoxylin method. The nerve-cells of the anterior horns were much diseased; by the thionin stain, they contained few chromophilic elements, and had very imperfect dendritic processes. The nucleolus stained deeply and it was a little difficult to make out the nuclear membrane. In some of the cells of the anterior horns the chromophilic elements had entirely disappeared. There were recent hemorrhages at some places in the cord, but no accumulation of pus-cells could be found in the cord. Sections from the lower thoracic region showed more disintegration than did those from the lumbar region, and it was impossible to distinguish here white from gray matter. Collections of round cells were seen within the cord.

There was diffuse staining with the Marchi method in the lumbar region and to some extent in the thoracic region, but it was not intense.

The nerve-cells of the anterior horns in the cervical region were much diseased. They stained deeply, were shriveled, had few processes, and in some the nucleus was peripheral. The anterior and posterior roots were normal in the cervical region.

The fright in this case was very pronounced. Could it have had any relation to the paralysis?

The tendency is to attribute all acute paralyzes developing immediately after fright to hysteria, and this tendency is justifiable in most cases; but there is a possibility that fright may act as an *agent provocateur*, in the sense of French writers, and be a cause of organic change. Papers bearing on this subject are found chiefly in the older literature. In many

instances the fright is only a coincidence, but in others it may affect the circulation in vessels already diseased. When syphilitic endarteritis has occurred in the vessels of the cord, apoplecticform myelitis has been observed not infrequently. I have already written on this subject.¹ Paralysis under such circumstances may develop within half an hour without any apparent exciting cause; how much more probable is paralysis, therefore, when severe emotion disturbs an impaired circulation. Blushing shows chiefly in the face and may be intense as a result of mild emotion, but the blushing is not confined to the face and may affect a large part of the body. Are the interior organs implicated in blushing? It is at least possible. A congestion of the vessels of the spinal cord from vasomotor disturbance when those vessels are diseased may cause thrombosis, and this certainly may cause paralysis, or, if the thrombosis be mild, the vitality of the affected part of the cord may be reduced and the susceptibility to toxins may be increased. One may well hesitate at the present time to accept as proved acute organic paralysis as caused by fright in cases in which the vessels are in normal condition. It may be well to review briefly some of this older literature on fright paralysis.

Kohts² refers to fright as a cause of exophthalmic goiter, icterus, turning white of the hair, and cerebral apoplexy. He had an unusual experience in that he was able to observe a great many cases of nervous and other disease that developed during the severe bombardment of Strassburg. During the thirty-one days of the siege the town was bombarded almost every night; 193,722 bombs were thrown into the city, and after the surrender only two houses showed no marks of the firing. Kohts reports cases of paralysis agitans, and of myelitis and other diseases which developed immediately after severe fright, one of which was with necropsy. The people of the city took refuge in the cellars, and repeatedly saw those about them killed. The effect of psychic trauma has probably never been more clearly shown. Kohts offers no explanation for the manner in which fright leads to organic disease. It is difficult to attribute such an array of cases to mere coincidence.

Since the investigation of emotional paralysis by von Leyden and Kohts, very little attention has been given to the subject, although their publications first appeared in 1873 and 1874.

The case of Todd,³ described by him as emotional paralysis, is questionable as regards an organic basis, according to von Leyden.⁴ Hine's⁵ case was one of chorea of pregnancy developing after severe fright. The midthoracic region of the cord was softened. Pasque's⁶ case was one of paralysis of the lower limbs cured by strychnin.

Leyden reported the case of a woman aged 21 who was awakened by fire in a house opposite the one in which she was. She was greatly frightened. Immediately after the fire was extinguished and she had returned to her bed, she experienced severe pain in the left leg. The following morning the left leg was weak and gradually spastic paraplegia developed. A

1. Spiller, W. G.: Jour. Nerv. and Ment. Dis., October, 1909.

2. Kohts: Berl. klin. Wchnschr., 1873.

3. Todd: Clinical Lecture by Beale, London, 1861.

4. Von Leyden: Klinik der Rückenmarks-Krankheiten, 1874, i, 173; 1875, ii, 181, 190, 430; Ztschr. f. klin. Med., 1880, i, 12; Berl. klin. Wchnschr., Feb. 20, 1905, p. 193.

5. Hine: Med. Times and Gazette, 1865, cited by von Leyden.

6. Pasque: Arch. de méd. belge., December, 1842.

diagnosis of thoracic myelitis from fright was made. The necropsy showed sclerosis in the midthoracic region of the cord.

The second case that Leyden reports was as follows: A girl aged 23, previously healthy, during the siege of Strassburg found on returning home that her house was on fire. Symptoms began immediately and gradually the lower limbs became paralyzed and contracted. The necropsy showed chronic diffuse myelitis with meningitis, the upper thoracic region was most affected.

Another case reported by Leyden is as follows:

A servant girl, aged 16, was greatly frightened by an attempt to rob a house. The two nights immediately following the attempted robbery she slept badly. On the morning of the third day following the psychic trauma, or more exactly, after sixty hours, the lower limbs became weak. Paresthesia soon appeared in both upper limbs as well as pain in both lower limbs, and the patient became unable to move any of her limbs and had flaccid paralysis with complete loss of sensation in all the limbs. She had retention of urine and incontinence of feces only during a few days, and the disturbance of the trunk disappeared, so that motion and sensation were lost except in the head, neck and trunk. She had no mental symptoms. Tendon reflexes became normal, and Babinski's reflex and electrical reactions were normal. The case described above Leyden regarded as functional, and the result of suggestive treatment demonstrated the correctness of this view.

Brieger⁷ says that organic cases caused by fright or mental shock have been reported by Todd, Hine, Pasque and Berger, but all were without anatomic foundation. Leyden was the first to show that such a cause might produce tissue changes in the central nervous system. He refers to the case in which Leyden found sclerosis in the midthoracic region, and to another in which he found diffuse sclerosis of the upper and middle thoracic regions. Brieger knew of no other anatomic evidence at the time he wrote his paper. His patient was a prostitute, aged 23, who had the symptoms of lumbothoracic myelitis developing first within a few hours after she was much frightened by a drunken man. The necropsy revealed a myelitis in the upper lumbar and lower thoracic regions. The patient had had syphilis. Brieger says clearly that fright was the only cause of the myelitis. It was not syphilitic, because no signs of visceral syphilis were found, but the syphilitic infection and the irregular life had made her more vulnerable. Still one may suspect syphilis notwithstanding Brieger's opinion. He thinks that the fright may have caused a temporary interruption of the circulation in the spinal cord, the lumbar region of which was exhausted by recent prolonged dancing. Fright affects the stomach and may cause vomiting, loss of appetite, ulcer and hematemesis, and may affect the lumbar region, causing pollution, etc. It is questionable whether the explanation given by Brieger can be accepted. The necessity of frequent micturition preceding examinations is well known by students.

P. K. Pel,⁸ writing in 1881, in describing this *Schrecklähmung*, said that while functional disturbance following fright is well known, other cases are observed in which disease of the spinal cord has fol-

lowed fright. Such are the cases of Russel-Reynolds, Todd, Hine, Leyden, Kohts, Brieger and others. Such cases are rare. Pel's case seems to have been one of functional paralysis following fright.

A case reported by Daus⁹ is a valuable contribution to fright paralysis. A boy, aged 14, was physically poorly developed, and was obliged to walk much, but was healthy until Nov. 16, 1901. On this day he was so greatly frightened by an automobile that, without being struck by it he fell to the ground and did not lose consciousness. When he tried to rise he was unable to do so, and he was carried home and put to bed. He had severe pain in the feet and both lower limbs were anesthetic as high as the gluteal region, and he had rectal and vesical symptoms.

Daus says that the most commonly affected region in fright paralysis is the lumbar cord, and this is because of functional overuse of this region. In his case there was no evidence of sexual abuse, which I have known to be the immediate cause of paralysis from lesion of the spinal cord, but the boy had been much on his feet, and in this way may have rendered his lumbar region more susceptible, but one would suspect some undiscovered cause in addition to fright. His case seems to show that the epiconus region has especial vulnerability to *Schrecklähmung*.

I have known persistent paralysis of the lower limbs to develop rapidly in a man during the early morning following repeated sexual intercourse occurring the preceding night.

The literature that Daus refers to on *Schrecklähmung* is of ancient date. With the exception of Leyden's paper in 1905 and Daus' in 1903, the subject seems to have been ignored by almost all of the recent writers.

Emotion has seemed in some cases to be the cause of hemiplegia in a person previously healthy. Cases of this kind have been observed by Babinski¹⁰ and Oppenheim,¹¹ and another was reported by E. Frank.¹² A woman, aged 26, developed left hemiplegia after a severe fright. The paralysis was believed to be organic and the result of a pontine lesion. No cause for this hemiplegia could be determined; the heart appeared to be normal, and at first no signs of syphilis could be detected, but the Wassermann reaction was positive. Careful examination revealed small scars near the mouth, the result of a facial eruption at the age of 5 years. The history of corneal opacity at the tenth year was obtained. Hereditary syphilis seemed probable. It is not likely that a healthy vessel would rupture from an emotion, but a diseased pontine vessel might yield, and the blood leak gradually.

Urinary paraplegia has been discussed in the older literature, but now one hears comparatively little of it. The paper of T. J. Walker has attracted considerable attention. He observed three cases of acute ascending paralysis following longstanding chronic cystitis. Urinary paraplegia, as he calls it, he states has been recognized since 1833, when Stanley made a communication to the Medico-Chirurgical Society; but Stanley's case seems to have been different. In Walker's¹³ case, the patient had a stricture of the urethra and chronic cystitis, and during an exacerbation he developed during a night numbness in the feet

7. Brieger: Ztschr. f. klin. Med., 1881, ii, 121.

8. Pel, P. K.: Berl. klin. Wchnschr., June 6, 1881, p. 325.

9. Daus: Monatsschr. f. Psychiat. u. Neurol., 1903, xiv, 66.

10. Babinski: Semaine méd., 1909, No. 1.

11. Oppenheim: Lehrbuch.

12. Frank, E.: Berl. klin. Wchnschr., June 21, 1909, p. 1154.

13. Walker, T. J.: Tr. Clinical Society of London, xxxviii, 80; Lancet, London, March 11, 1905, p. 636.

and some loss of power in the legs. The following morning he had paresis of the limbs up to the thighs. By the evening of the same day the paralysis had extended upward to the arms and thorax, and breathing was embarrassed. The symptoms rapidly progressed, and death occurred eighteen hours after their onset. So far as the author could remember, the catheter or bougie was not used during the last illness.

In Case 2 the patient had chronic cystitis. December 31, he had acute exacerbation of his bladder trouble with malaise and some fever, but the symptoms were not urgent. On the morning of January 4 he experienced uncomfortable sensations and feebleness in the lower limbs. By midday he had paraplegia. He died forty-eight hours after the first indication of paralysis.

In Case 3 there had also been chronic cystitis. The extension of the paralysis upward was rapid. Death occurred eighteen hours after the first appearance of paralytic symptoms.

Necropsy was not obtained in any of the three cases.

The literature referred to by Walker is not extensive. In addition to Stanley, who in 1833 directed attention to urinary paraplegia and explained it as reflex paralysis, Troja is said by Leyden to have stated that violent inflammation of the kidneys may produce an irritation of the nerves of the kidneys and the inflammation may extend to the spinal cord. Guel¹⁴ upheld the nervous reflex view of urinary paraplegia. Leyden¹⁵ believed that the lesion was myelitis. He assumed that the inflammation first passed to the nerves and neuritis so produced may lead to myelitis. Fenwick accepted Leyden's views, but there seems to be little or no pathologic study of these cases.

A case of rapidly fatal ascending paralysis in a man with pyuria and prostatic hypertrophy, but without necropsy, was reported by G. B. Buchanan.¹⁶ It was suggested that the passage of an instrument in a patient, who had recently been losing health with his urinary system obviously diseased, might have induced an increased absorption of poisons into the blood, leading to a profound intoxication of the cord without giving any precursory signs.

Orr and Rows in several papers, and later in association with Stephenson,¹⁷ have demonstrated that inflammation of the central nervous system is easily induced by infection of the ascending lymph-stream of nerves, and that the spinal cord and brain are exposed to infection in this way. Their experimental work has shown that infection of the lymph-system of peripheral nerves causes an ascending neuritis which spreads upward to pass over the posterior root ganglia and along the spinal roots to the cord. Any part of the central nervous system may be attacked by organisms or toxins passing up the nerves from infective foci, and the ultimate result of infection may vary according to the quality of the exciting cause.

The case which I report in this paper should, I think, be explained in the light of Orr and Rows' findings, and the myelitis should be regarded as secondary to the perirectal infection. It is not impossible that the liability to myelitis was increased by the fright which the man experienced. Ascending neuritis, however, has always been regarded as very uncommon.

2046 Chestnut Street.

14. Guel: *Guy's Hosp. Rep.*, 1861.

15. Leyden: *German Clinical Lectures*, New Sydenham Society.

16. Buchanan, G. B.: *Brit. Med. Jour.*, Jan. 20, 1906, p. 145.

17. Orr, Rows and Stephenson: *Review of Neurology and Psychiatry*, July, 1913.

ABSTRACT OF DISCUSSION

DR. HUGH T. PATRICK, Chicago: I would suggest to Dr. Spiller that if he will put in a sentence to the effect that myelitis is, after all, a nerve disease, he would do a lot of good. The authority of that statement, if he feels like making it, would be of advantage. I presume we have all had the same experience of having a diagnosis of myelitis made in a condition which is not really a myelitis. Dr. Spiller would, I know, be the one best fitted to handle this question, as he was one of those who investigated the matter of so-called myelitis. As a matter of fact I believe it is true that inflammatory or infectious myelitis is a decided rarity, and if Dr. Spiller would put the weight of his influence in this direction I think it would be very useful.

DR. FRANK P. NORBURY, Springfield, Ill.: Some recent experimental work concerning fear is that of Dr. Cannon of Harvard Medical School, on the study of the adrenals in states of emotion, especially fear, rage and pain. The experiments were on cats frightened by a dog. He shows a very close relationship in emotional excitement between the secretion of the adrenals and the reactions which follow, including blood-pressure. His papers were published in *The American Journal of Physiology*.

DR. C. D. CAMP, Ann Arbor, Mich.: Dr. Spiller's paper has a tremendous medicolegal importance if it proves that organic disease might result from fright. One point did not seem entirely clear to me, and that is, did Dr. Spiller's patient have the abscess before the fright, or did it develop subsequently?

DR. CHARLES K. MILLS, Philadelphia: As Dr. Camp has stated, this paper might have great importance medicolegally. It might even have some effect in enlightening the Supreme Court of the state of Pennsylvania on their expressed opinion that fright must not be taken into account in a court of law in cases of suit brought to recover damages for accident. That is one of the curious conditions in which we find ourselves in the state of Pennsylvania. This decision has probably had the effect of making the attorneys for the plaintiff extremely careful about bringing the question of fright into the issue, causing them to dwell more on the effect of the reception of contusions, lacerations or other physical injuries which might be made the basis for damages. I am familiar with the paper to which Dr. Norbury refers, having recently used it in the preparation of an article of my own. In this important paper of Cannon, the author dwells on the effect of excessive emotion, as rage or fear or joy, on the autonomic nervous system. He explains the effect of such emotion on the vessels, heart and glands and other organs or parts which are under the influence of this system. Very extraordinary disturbances of this part of the nervous system can, of course, be brought about by fright. If we accept the James-Lange theory of emotion, impressions are made on that system before there is any expression of the emotion itself. The only point which does not appear to me as logical in Dr. Spiller's paper is that, in a case such as he has referred to, how can fright bring about the microbic condition which was evidently at the bottom of the abscess formation? There seems to be a link wanting in the etiologic chain. I am pretty well satisfied, however, that fright can do some dreadful things and not impossibly bring about organic changes in the nervous system.

DR. E. E. SOUTHARD, Boston: I should be inclined to deny, and I believe almost every member of the Section would also deny, that the emotion in Dr. Spiller's case was an important factor in producing the spinal-cord lesion. Of course, however, the literature of the *stigmatisées* of France may be quoted in rejoinder. Professor James was fond of quoting from more modern French writers certain cases in which posthypnotic suggestion determined favorably or unfavorably the course of suppuration. Again, I should say that Dr. Cannon's work on the zones in which the sympathetic system comes into contact with the cranial and the sacral, autonomic symptoms might have a bearing on a case like Dr. Spiller's.

DR. WILFRED HARRIS, London, Eng.: The author probably would include not only fright, but profound emotion of

other kinds as well. We have all seen nervous diseases of various kinds follow violent emotion. I have seen the first symptoms of locomotor ataxia develop the next day after violent emotion, and I have seen trigeminal neuralgia develop in a woman three-quarters of an hour after seeing her child killed in the street. Paralysis agitans, too, was noticed, especially frequent after the horrors of the siege of Paris. If we study the question we must give up the materialistic point of view that emotion has no relationship to the development of organic disease. In Dr. Spiller's case I should be less inclined to accept fright as the cause, but, as suggested by him, should be inclined to believe that ascending neuritis had much more to do with it, as the abscess must have been present for some time previous to the fright. In bicycling days it was not uncommon for perineal neuritis to develop as the result of saddle pressure. In one such case that I remember a man who had been riding on a bicycle for a number of hours developed ascending neuritis and myelitis and died. These cases of ascending neuritis are, I think, extremely rare, and Orr and Rows' work must be looked on very critically before it is accepted as evidence of ascending sepsis. Of course, we know that in tetanus there is an ascending poisoning of the motor roots, but it is stopped by the posterior root ganglia. Then we have, as a safeguard against ascending sepsis, the normal exudation of the cerebrospinal fluid outward along both anterior and posterior roots, and I think that it must be because of this safeguard that these diseases are not more common. Otherwise ascending myelitis would be much more common than it is at the present time, and it is an extremely rare disease.

DR. WALTER B. SWIFT, Boston: I have seen a case of multiple sclerosis, one of general paralysis and several others in which fright was said to be the cause of, and had in fact immediately preceded, the onset. From these and many other cases which have come under my observation, I have been led to believe that fright merely lowers resistance—the precipitating element. This inference may also be drawn from the work of Cannon. He has shown how fear and rage cause increase of secretion. With this the metabolic decrease of a resistive process might very naturally follow. If fright really caused paralysis agitans, in Paris they all would have had it. No, the disease was potentially there, the fright merely withdrew the resistance.

DR. WILLIAM G. SPILLER, Philadelphia: Dr. Patrick asks whether I regard myelitis as rare. If by myelitis is meant only those conditions in which micro-organisms are found in the cord, it is very rare. If, on the other hand, those are included which show lymphocytic infiltration and congestion, as in poliomyelitis, I must say myelitis is not rare. It is common in syphilis. What shall be recognized as myelitis has been discussed over and over again. Where shall we make sharp distinctions? Lesions caused by occlusion of the blood-vessels are common with inflammation, as in syphilitic myelitis, and they are the common finding in cases of pressure on the cord, as in fracture of the vertebrae.

Harvey's Precepts for Lecturing.—Harvey laid down the following precepts for his own guidance as lecture precepts which the modern anatomical lecturer might observe with propriety: (1) to show as much as may be at a glance, the whole belly for instance, and afterward to subdivide the parts according to their position and relations; (2) to point out what is peculiar to the actual body being dissected; (3) to supply only by speech what cannot be shown on your own credit and authority; (4) to cut up as much as may be in the sight of the audience; (5) to enforce the right opinion by remarks down from far and near and to illustrate more by the structure of animals according to the Socratic rule; (6) not to praise or dispraise other anatomists, for all did well and there was some excuse even for those who are in error; (7) not to dispute with others; (8) to state things briefly and plainly; (9) not to speak of anything which can be explained without the body or can be read at home. Here we have a combination of orthodox medical ethics and sound pedagogy.—Dempster, "Pathfinders of Physiology."

OCCLUSION OF THE POSTERIOR INFERIOR CEREBELLAR ARTERY

REPORT OF CASES*

ANDREW C. GILLIS, A.M., M.D.
BALTIMORE

The posterior inferior cerebellar artery is usually described as the largest branch of the vertebral artery, and its course as passing obliquely backward around the medulla oblongata, at first between the roots of the hypoglossal nerve, then between the roots of the accessory and the vagus nerves, to end on the inferior surface of the cerebellum.

In a recent study Bury and Stopford¹ have shown that there is considerable variability in the course of the artery; that in many cases, instead of passing directly backward after its origin from the vertebral, it forms a distinct loop, the convexity of which is toward the pons. The ascending limb of the loop usually passes upward in the posteriolateral sulcus, and in this position supplies small terminal branches to the medulla oblongata. Occlusion of the posterior inferior cerebellar artery produces a definite clinical syndrome, in spite of the variability in the course of the artery, and in the number of branches it supplies to the medulla oblongata. Cases have been studied pathologically by Hun,² Thomas,³ Wallenberg,⁴ Spiller⁵ and others, and their investigations have shown that the lesion in the medulla extends laterally from the restiform body to the inferior olive and vertically from where the restiform body passes into the cerebellum to about the middle of the hypoglossal nucleus. The structures usually involved are the descending root of the fifth nerve, the nucleus ambiguus, the glossopharyngeal and vagus nuclei and the ventral and dorsal spinocerebellar tracts. (Wilson⁶).

The symptom complex produced by occlusion of the posterior inferior cerebellar artery is as follows: sudden onset with giddiness and marked tendency to fall to the affected side; no loss of consciousness; difficulty with swallowing and occasionally with phonation; loss of appreciation of pain, heat and cold over part or the whole of the trigeminal area on one side of the face (usually the side of the lesion) and a corresponding loss of pain and temperature sense over the opposite side of the body from the face down; touch, tactile discrimination, deep pressure and muscular sense are intact; paralysis of the sympathetic on the side of the lesion, causing retraction of the eyeball, contraction of the pupil and drooping of the eyelid; ataxia of the arm and leg, usually on the side of the lesion. In the course of from two to six months practically all symptoms disappear, other than the sensory changes, which usually are permanent. Although a comparatively rare condition, sufficient cases have been studied to show that the symptom complex varies very little, especially so when the initial symptoms have passed away.

During the past year, two cases have come under my observation, one of which I have had the privilege of studying from within a few days of the onset; the

* Read before the Section on Nervous and Mental Diseases at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Bury and Stopford: *Med. Chronicle*, Manchester, 1913, lviii, 200.

2. Hun: *New York Med. Jour.*, 1897, lxxv, 513.

3. Thomas, H. M.: *Maryland Med. Jour.*, 1907, i, 204.

4. Wallenberg: *Arch. f. Psychiat.*, 1901, xxxiv, 923.

5. Spiller: *Jour. Nerv. and Ment. Dis.*, 1908, xxxv, 365.

6. Wilson: *Proc. Roy. Soc. of Med., Neurol. Sec.*, 1909, p. 52.

second case, an old one, I have observed especially in regard to the presence of permanent symptoms. Both patients are quite intelligent, and this has been of great value in the study of sensory changes.

CASE 1.—The patient is a married woman, aged 40, whom I saw in consultation with Drs. William T. Watson and A. W. Macdonald of Baltimore, Oct. 6, 1913. Her general health had been fairly good up to the present illness, with the exception that she had complained of pain in the back for several years. She gave the following history in regard to her present illness: Oct. 2, 1913, while attending to some household duty, she suddenly became giddy and found that on attempting to walk, there was a tendency to go to the right side. This did not bother her very much, and on the following day she was able to come from her home in the country to Baltimore, a distance of about 40 miles. That night, about midnight, thirty hours after the initial symptoms, she had a sudden sharp pain in the right forehead, lasting for about an hour. This pain was followed by a sense of numbness over the upper part of the right face. The following afternoon (October 4) about 4 o'clock, she had an attack of vomiting lasting for a few minutes. When I saw the patient, October 6, she presented the following condition:

The right eye was slightly retracted, the pupil small, and slight drooping of the eyelid. Both pupils reacted to light and distance. The right did not dilate as readily as the left when the skin of the neck was irritated. There was no nystagmus. Sight, hearing, taste and smell were normal. No weakness of the muscles of the face, pharynx or larynx was noticeable, nor was there any difficulty in swallowing, nor any disturbance of voice. There was a marked tendency to fall to the right side when the patient attempted to sit up in bed, and it was impossible for her to stand up on account of this condition. The patellar and Achilles reflexes were somewhat more marked on the right side than the left; the arm reflexes were equal on both sides; the plantar reflex was normal on both sides.

Sensory Disturbances: The patient complained of slight numbness over the right side of the face, and the left side of the body from the nipple line down; the right eye felt peculiar, the right nostril as if it were swollen. Touch, tested with cotton-wool, was perfect over the entire body. Tactile discrimination, tested by means of the compasses, showed no difference between one side of the body and the other. The conjunctiva and cornea of the right eye were insensitive to the touch of cotton-wool. The right nostril was not so sensitive as the left. Deep pressure sense was normal on both sides.

Muscular Sense: The patient could appreciate all movements either of arm or leg on either side of the body. Recognition of weight, size, shape and form was normal.

Pain Sense: There was absolute loss of cutaneous pain over the upper part of the right side of the face, comparing roughly with the distribution of the first and second branches of the trigeminal nerve. There was also total loss of pain sense over the left side of the body below the nipple line, or about from below the distribution of the fourth spinal root segment.

Temperature Sense: There was loss of appreciation of heat and cold over the same area as that of loss of pain.

There was no change in the patient's condition until about October 17. On that date it was found that a pin-prick produced a peculiar, disagreeable, tingling feeling over the affected area on the left leg up to about the knee. Stroking

or scratching caused the same disagreeable feeling. The affected area on the face was somewhat less in extent, but there was no change in the character of sensation experienced there. There was still difficulty in standing erect.

October 25: Area of disagreeable feeling produced by stroking or pin-prick now felt up to the hip. No change over forehead. Patient is able to stand without assistance, but is still unable to walk.

October 31: Disagreeable feeling now felt over the entire affected area on the left side. Extremes of heat and cold can be recognized over the forehead.

November 28: No change in the sensory symptoms, with the exception that the disagreeable, tingling feeling was not so marked. The right pupil was about normal size, but there was still some drooping of the eyelid and retraction of the eyeball. The patient could walk fairly well, but was somewhat uncertain in going down stairs.

The patient went to her home, Nov. 30, 1913, and I did not have an opportunity to examine her again until June 18, 1914. At this time, examination showed practically no change in her condition. The sensory disturbances and the eye symptoms were the same as on Nov. 28, 1913. There was still a

slight tendency to fall to the right side when the head was quickly turned, either to the right or left, and some slight unsteadiness in going down stairs.

From the increase in severity of the symptoms for a period of over forty-eight hours until the clinical syndrome was complete, one would usually consider this case to be one of thrombosis rather than embolism of the artery. No cause could be found for the supposed thrombosis. There was persistent high blood-pressure, ranging from 250 mm., October 4, to about 200 mm., Nov. 28, 1913, and on June 18, 1913, it was still found to be abnormally high—210 mm. There seemed to be no signs of arteriosclerosis unless the high blood-pressure could be counted as symptom. The urine was normal: a Wassermann test of the blood-serum was negative.

CASE 2.—The patient is an unmarried man, aged 39, who was referred to me by Dr. A. G. Rytina

of Baltimore. One morning after breakfast, in August, 1913, this patient had a severe attack of giddiness, so severe that he could not stand and was forced to crawl back to bed. Even when sitting up in bed, there was a marked tendency to fall to the left side. He had severe vomiting; was unable to swallow anything for several hours, and for a week could swallow only liquids. His voice was weak and husky for several days. There was no interference with sight, hearing, smell or taste. When examined by a physician, it was found that there was total loss of pain and temperature sense over the left side of the face and over the entire right side of the body, the face alone excepted. At the time of the onset of his illness the patient was employed in St. Petersburg, Russia, as a skilled mechanist. He was thought to have lues, and was treated by a Russian physician with mercurial treatment for six weeks. At the end of that time, he was able to walk fairly well, and to travel to Aachen, Germany. Here he took the baths for six weeks longer, and then sailed for his home in Baltimore. Although he experienced no difficulty in walking on land, aboard ship he found, even when the ship was very steady, that he was insecure on his feet. In fact, he avoided going on deck because he was afraid he would be thought intoxicated, on account of his unsteady gait. A few weeks after arriving home, he attempted to work at his trade, but he found that he could not use his right hand so readily as formerly in doing any careful or exact work. In March, 1914, he again

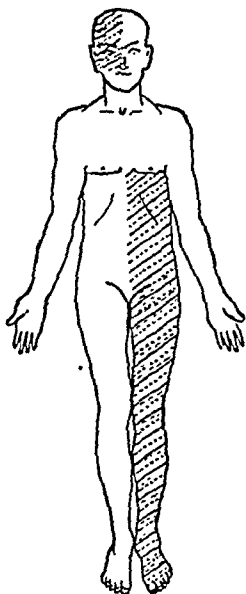


Fig. 1.—Areas affected in Case 1.

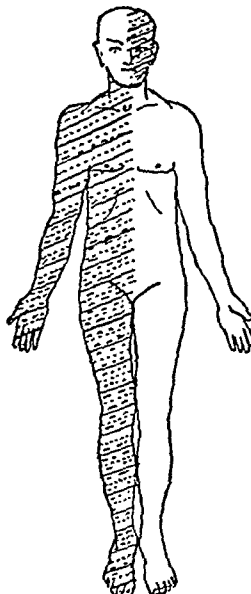


Fig. 2.—Areas affected in Case 2.

because after the thrombosis of the posterior inferior cerebellar artery, the headaches disappeared entirely and have not returned in a period of two years. Another condition of interest in our case was the presence of a persistent glycosuria. I think Wallenberg reported two cases in patients with glycosuria. In our case sugar was present in from 2 to 8 per cent., and has persisted. So far as the history shows, the date of its initial appearance corresponded somewhat to the time of onset of the occlusion, and I have often wondered whether in this case there might not have been some analogy in the distribution of the posterior inferior cerebellar artery, and that an occlusion caused irritation of the floor of the fourth ventricle.

DR. WILFRED HARRIS, London, Eng.: I have seen many of these cases clinically but have followed only one to necropsy. The best description I have yet seen of that condition was presented by Dr. Spiller. I think Dr. Gillis did well to bring forward this condition because those not familiar with its clinical symptoms and pathologic findings are likely to be completely lost when they first meet such a case. A short time ago I saw a case of this kind with a very good doctor indeed, but he had not the least idea what he had in front of him. An old man of 80 was suddenly taken with giddiness and was totally unable to walk. When I saw him and attempted to make him walk he had crossed hemianalgesia and a crab-like gait. This is very suggestive of posterior inferior cerebellar thrombosis. The anesthesia varies according to the amount of damage. Sometimes there is no analgesia on the opposite side from the lesion. One symptom which I have seen in a case of this kind I have not seen elsewhere described. The case was that of a man past 70 who was taken suddenly with the first symptom as he expressed it, as though thousands of needles had been thrown against the side of his face. About twelve months after this, when able to walk again with some comfort, he said that he began to experience pain in the face, and the case was sent to me as one of trigeminal neuralgia. The pain was paroxysmal and shooting, resembling tabetic pains, and I think might be accounted for as due to sclerosis of the spinal root of the fifth nerve. On investigating the case I found it was not one to attack with injection, as there was complete analgesia of the left fifth nerve, but the pain was so agonizing something had to be done, and I was urged to attack it; therefore I did so against my judgment. The result was that his pain was even worse than before.

DR. A. C. GILLIS, Baltimore: With regard to headache, there was no history of it in either case, nor has there been any since the condition occurred. There was no glycosuria. I had those points in mind in investigating the cases, having read Dr. Hammes' report, and I could find absolutely no sign of glycosuria. I bring these cases before the Section not because they are fairly rare, but to emphasize more particularly the clinical syndrome described by Dr. Spiller, which I followed largely, in order to bring it to the attention of the general practitioner. I believe that it can be as readily recognized by the ordinary practitioner as by the neurologist.

Man's Redemption of Man.—The human heart by which we live has been touched as with the wand of a Prospero. What availed the scepter race! What the glory that was Greece, or the grandeur that was Rome! Of what avail even has been the message of the gospel, while the people at large were haunted by fear and anxiety stricken by the pestilence of the darkness and the sickness of the noon-day? The new socialism of Science with its definite mission cares not a rap for the theories of Karl Marx, of Ferdinand Lassalle, or of Henry George; still less for the dreams of Plato or of Sir Thomas More—or at least only so far as they help to realize the well-being of the citizen. Nor is there need to fear that in weighing the world in our balance we may drain the sap of its life, so long as we materialize in the service of man those eternal principles on which life rests—moral fervour, liberty and justice.—William Osler.

A CASE OF MYASTHENIA GRAVIS*

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CROMWELL, CONN.

The case of myasthenia gravis which I am about to report will not contribute anything new to the etiology or pathology of the disease, but from the standpoint of unusual development and duration it seems to me worthy of description. Incidentally, the clinical features may serve to provoke discussion of the neurogenic, myogenic or combined lesions often considered responsible for the syndrome presented. The time allotted me will not allow elaboration of the many theories of causation and of the widely divergent post-mortem findings obtained by most careful investigators. Suffice it to say that as yet, as far as I have been able to learn, no definitely accepted pathology has been determined.

I am indebted to my chief, Dr. Frank K. Hallock, for permission to report the following observations:

History.—Mrs. X., aged 48, was the fifth of nine children. The father died at 75 of nephritis, but had always been strong. The mother died at 52 of a "brain-fever," so called, and was of a decidedly nervous temperament. Of the brothers and sisters there are three now living and well. Of the five who died, two died from the effects of appendectomies, one of gunshot wound, one at birth, and one of septicemia. One of the sisters for years previous to the surgical operation which caused her death suffered from trophic disturbances of the cornea and the skin, which were never diagnosed. As a child the patient was considered exceptionally strong and at an early age took on herself many household responsibilities. Patient was married at 28. The first child was born in the second year of her marriage. She had a difficult, thirty-six-hour labor, with retained placenta and moderate fever. This necessitated bed treatment of four weeks.

Eight months after the birth of this child the patient, on arising one morning, discovered that her eyes did not move together and that motion was limited. As far as she could determine the left eye seemed the more affected. Diplopia suddenly became marked.

She was seen at once by an oculist, who noted beside the muscular defect of which the patient complained a slight ptosis of the left eye. She endured this very disagreeable condition for many years, during which time she had three normal children and no miscarriages. She maintained her position as the head of a large household, with many social responsibilities, and took an active part in the upbringing of her children. Six years ago, in spite of the eye-strain involved, she took up the study of art and drawing and became utterly exhausted. This collapse required absolute quiet and rest. Shortly afterward an eminent oculist made an exhaustive study of her ocular condition and concluded that the limitation of movement together with the diplopia were due to a central lesion following childbirth.

Four years ago the patient fell down a flight of stairs and struck the right side of her head with considerable force. Since this accident she has been unable to move the right eye as much as formerly, has had no endurance, and her daily life has been progressively more circumscribed.

She passed through the menopause at 46 with no particularly disagreeable vasomotor disturbances.

About eighteen months ago she noticed for the first time that her speech became peculiar at the end of some length of time in reading aloud or in conversation. This feature has persisted, off and on, with varying intensity.

During the past twelve months she has observed a fatigue of her muscles of mastication, especially of the tongue, while taking her meals. At times the sensation has been so overpowering that she has been forced to rest the bolus in her

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cheek until she could swallow it after sufficient rest. On a few occasions liquids have passed into the upper nasopharynx and posterior nares.

Walking has become more and more difficult, and prolonged conversation exhausting.

Feeling concerned over a certain loss of interest in things, and a diminution of her keenness of concentration, she came under our observation in April of last year, for the purpose of learning how best to adjust herself to her home surroundings with her ocular limitations. At no time was the patient alarmed by her symptoms, but rather comforted herself with the explanation that her "lack of vitality was due to eye-strain."

The following is my record of physical and neurologic findings, April 23, 1913:

Examination.—Patient in recumbent posture presents moderate Basedow facies, although exophthalmos is very slight. Sallow complexion; mucous membranes show no noteworthy pallor; skin generally dry; tongue clean; appetite fair; digestion normal; bowels not constipated.

Pulse 80; regular in force and rhythm. Systolic pressure, left arm, recumbent, 112 mm. (Tycos). Lungs negative; noted peculiar formation of anterior chest resembling flattened pigeon-breast. Patient is unable to take deep inspirations, failing apparently to put lower intercostal muscles and diaphragm into normal play. Heart negative except for very faint hemic murmur at base. Sounds well defined. No hypertrophy.

Abdomen is negative except for moderate bilateral renal ptosis. Liver and spleen not palpable; no tenderness elicited except on deep palpation over kidneys.

Pelvic examination made at a later date negative except for moderate ligament relaxation.

Thyroid gland not enlarged.

Mental state is apparently normal; patient is intelligent; excellent witness; good memory; not easily depressed; essentially not neurotic in type.

Special Senses: Vision: Acuity not tested—refractive error corrected by glasses. Fields are normal to rough test. Fundi examined at a later date and found normal. Hearing is normal to watch-tick and to tuning-fork tests. Taste and smell are normal by actual tests for salt, acid, sweet, etc.

Cranial Nerves: Third, Fourth and Sixth: There is the smallest possible lateral movement of ocular muscles to right and left, no upward and very slight downward motion. Axes are parallel. Very moderate ptosis on the left, none on right. No strabismus; diplopia only in upward fields. No nystagmus. Normal reaction to Barany caloric tests within the range of the muscular limitation. Pupils are equal, regular, central and moderately dilated. The reaction to light accommodation and consensual tests is definitely present, but sluggish.

Fifth nerve is intact in motor and sensory tests.

Facial Nerve: Levator palpebrae superioris acts well and equally right and left. Orbicularis palpebrarum very weak, right and left to resistance, but patient closes eyes normally at will except when very tired, then action of the right is not complete. Slight right facial paresis noticed in weakness of frontalis, orbicularis palpebrarum and corrugator supercilii muscles.

Eleventh and Twelfth Nerves: Swallowing tests are normal; palate rises equally, right and left. Tongue protrudes in the middle line; no tremor and no wasting.

Speech during examination is normal, but has a certain nasal quality.

The motor system, including head and neck, upper and lower extremities and trunk is intact. Range and tone are normal. Power is somewhat diminished, but not more than one would expect in a patient who has been so restricted in activity. There is no tremor, wasting or ataxia in upper or lower extremities.

The sensory system is intact for cotton-wool, pin-prick, deep pain, position, vibration and astereognosis tests.

Reflexes: Palatal, present right and left. Jaw-jerk normal. Supinator, bicipital and tricipital present and equal, right and left. Epigastric and abdominal, absent right and

left. Knee- and ankle-jerks increased equally right and left. No clonus. Plantar negative to Gordon, Oppenheim and Babinski tests. There is noted a *mouvement d'éventail* and marked flexion of the right toes; and on the left a slight flexion of the toes only. On both sides the great toe remains stationary on plantar stimulation.

Gait normal. Rombergism absent.

Sphincters normal.

Urine Examination, April 28: Daily quantity, 52 ounces; specific gravity, 1.010; acid; albumin and sugar absent.

Blood Examination, October 7: Red cells, 5,560,000; leukocytes, 8,656; polymorphonuclears, 63.5 per cent; transitionals, 1 per cent; small lymphocytes, 30.2 per cent; large lymphocytes, 3.8 per cent; eosinophils, 0.5 per cent; basophils, 1 per cent; platelets normal; 500 cells counted.

Progress under Observation.—The foregoing points covering dysphagia and dysarthria were not complained of during the first interviews because the patient did not consider them of any importance. At first she complained only of general fatigue and wished instructions of how best to manage her physical and nervous force. Placed on a routine of two or three short walks daily, together with massage and passive movements, the patient soon presented a picture of fatigue of a peculiar order. A ten-minute walk was often followed by profound sleep, varying from one to two hours in length. She complained of indefinite aching throughout the body, but particularly of the trunk. Massage produced great fatigue. Within a few days difficulty in chewing her food was noted—a fatigue of jaws and tongue which passed away with a few moments' rest—with a return in as many moments. Soon the patient was tested for reading aloud. At first the words were clearly enunciated, but at the end of three minutes, the voice became noticeably husky and steadily more and more indistinct. At the end of five minutes the dysarthria became painful, accompanied by an overwhelming sense of oppression in the chest and a general exhaustion. On one occasion the patient was forced to go on to an almost complete mumbling of words and then commanded to clear the throat two or three times and continue. The surprising fact was noted that without more than momentary rest, such as was required in clearing the throat, the words gradually became more distinct until the reading was quite intelligible. Absolute exhaustion followed this forced test and the patient was unable to take her dinner or to sleep during that night. Consequently, in later observations, this test was not repeated, although dysarthria in ordinary conversation was constantly noted.

The patient often required support for her head and neck while in a sitting position because of great weakness.

During the latter part of May the myasthenic reaction was sought in the face, neck, shoulder-girdle and forearm muscles without positive results. Brisk faradism brought forth a sharp, apparently normal wave of contraction to repeated shocks continued for several minutes. At a later date, however, it was definitely shown that continuous mechanical irritation of the deep reflexes produced a diminution of reaction. June 10, the patient went to her summer home, where her physical and mental activities were restricted. Easy fatigue was constantly noted. During the summer she gained 5 pounds in weight.

She returned for further observation October 2. The rest of our experience with her was devoted to experimental therapy. Placed on carefully regulated thyroid medication she speedily developed untoward symptoms such as rapid loss of weight, increased pulse, moderate hyperpyrexia and malaise. Thyroid was discontinued after five days. It may be interesting to note here that although the patient manifested at no time neurotic tendencies, bromid in 10-grain doses seemed to afford the greatest relief. Strychnin and hypophosphites long continued were apparently of no service. A second blood examination including a differential count was entirely negative. No Wassermann was taken because patient's knowledge of medical procedures seemed contra-indication. Under absolute rest and restricted use of voice and eyes, local manifestations of easy fatigue continued to show in various tests. Diagnosis of myasthenia gravis was made in November. Dr. Frederick Tilney of Brooklyn in consultation confirmed the

diagnosis. Because of a change of residence, the patient then passed out of my direct observation.

The history since then has been one of variable states; at times the patient has been overwhelmed with sensations of "sinking" exhaustion, sometimes immediately followed by comfortable days. There have been no attacks of dyspnea, although as remarked above, the intercostal muscles and diaphragm were apparently affected. As far as I have been able to learn there has been no profound change in the condition in the past six months.

In conclusion I would call attention to four facts which I consider worthy of reiteration:

1. The disease is now of nineteen years' duration, and the patient is not at present in an alarming state. I believe that in point of time it is the longest case reported.

2. There was sixteen years' interval between the appearance of the first objective sign, that is, ocular paresis and ptosis, and the throat and jaw symptoms.

3. During these sixteen years the patient suffered only from what she considered a low state of vitality induced by eye-strain; managed her household and had three normal labors.

4. Passive manipulation of the general muscle-groups produced at times great exhaustion.

ABSTRACT OF DISCUSSION

DR. GEORGE A. MOLEEN, Denver: Myasthenia gravis has been a subject of particular interest to me inasmuch as one of my early cases was distinctly one, I think, of myasthenia gravis from the clinical point of view. It was reported, however, by me, owing to the findings later, as one resembling Addison's disease. It began twenty-four years prior to the time I saw it, with muscular weakness, ease of fatigue, dysphasia, and some ocular symptoms which I do not recall now. There were remissions from time to time. The patient was examined at that time by Dr. Church of Chicago, who thought that it was then a progressive muscular atrophy. Some six years later he again had opportunity of seeing the case, when he concluded that it was one of myasthenia gravis. The attack was in its height when I first observed the case in Denver in one of the summer months. A considerable dysentery was the reason for my being called. When we find a patient in Colorado with a blanket over his shoulders, suffering with dysentery and unable to move because of extreme weakness our first impression is—tuberculosis. My question as to how long the lung condition had existed was met with the prompt response, "I have no lung trouble, it is muscular weakness." I found that this was true. There was profound fatigue, dysphasia and dysarthria; the reflexes were normal, but rapidly enfeebled by examination. In short, the examination as carried out revealed a tenderness in the right hypochondrium, and catheterization of the ureters also showed that the pus that was in the urine came solely from the right kidney. An operation was advised, and a large perinephritic abscess was opened, the poles of which could not be reached, but it was fair to presume that the upper pole of this abscess compressed the adrenal between the abscess cavity and the liver. Evacuation of the abscess was followed by prompt relief. In the course of four or five days after leaving the hospital the patient walked from his residence some eleven or twelve squares and returned, progressing from that time on, and is conducting a business in one of the middle states at present. This case would suggest the relation of the internal secretions at least. Further than this I have nothing to say. I was struck by the statement that thyroid had been used and aggravated the symptoms. It might be pertinent then to suggest that the adrenal substance might be used in this case. I have been very frequently reminded of my experience in this one case, which was unique, and which is, I think, at least worthy of mention in association with Dr. Karpas' case.

THE NECESSITY FOR RESTRICTION AND CONTROL OF SEWAGE POLLUTION OF THE GREAT LAKES SYSTEM*

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The success of any sanitary improvement depends on public opinion, and before we achieve any decided improvement in the condition of our sewage-polluted sources of water-supply there must exist a healthy sentiment in favor of such improvement. There has been considerable popular clamor in favor of "prevention" of pollution, but by demanding the impossible these well-intentioned enthusiasts did more harm than good.

Absolute prevention of pollution of waterways on an inhabited watershed is impossible. Speaking generally, water-supplies taken from streams and lakes which receive the drainage of agricultural and grazing lands, rural communities and unsewered towns are unsafe for use without purification, but are safe for use if purified.

If pollution on uninhabited watersheds is inevitable and water taken from such sources must be purified, why, asks the practical city engineer, may we not utilize the streams for sewage disposal and avoid expensive methods of sewage treatment?

In waterways where some pollution is inevitable and where the ratio of the volume of water to the volume of sewage is so large that no local nuisance can result, the method of sewage disposal by dilution represents a natural resource, and the utilization of this resource is justifiable for economic reasons, provided that an unreasonable burden or responsibility is not placed on any water purification plant and that no menace to the public health is occasioned thereby.

Thus the whole question of how much or how little sewage treatment is necessary in an equitable adjustment between sewage treatment and water purification hinges on "what constitutes an unreasonable burden to impose on a water purification plant."

In order to estimate what constitutes an unreasonable burden or responsibility for a water purification plant we must first have a clear idea of the ultimate result expected of the plant, namely, a safe drinking water.

WHAT IS SAFE DRINKING WATER?

To be absolutely safe in answering the above query we would say that a safe drinking water must be a sterile water. However desirable this ideal may be it is not practicable in the public supplies of large cities. We must accept a slight occasional pollution as inevitable. Instead of attempting to find the germs of typhoid fever, Asiatic cholera and dysentery in water, we accept the presence of the *Bacillus coli* as an index of pollution with sewage, for the reason that the chances of finding the *B. coli* are very much better than the chances of finding the specific germs in the small quantity of water examined.

When we consider the grossly polluted water-supplies used by many of our large cities until recent years, we must admit that even if the present effluents from filter plants do not show constant absence of

* From the United States Public Health Service.

B. coli, they must be classed as reasonably safe, or relatively safe water.

In order to secure statistics from some of our largest filtration and purification plants a circular letter was sent out to about forty cities.

About fifteen responded, and in most instances the statistics covered at least one year. The list included mechanical, or rapid sand filtration, slow sand filtration, precipitation and disinfection, and disinfection alone.

TABLE 1.—SHOWING AVERAGE NUMBER OF BACILLUS COLI PER HUNDRED C.C. IN BOTH RAW WATER AND FILTERED OR TREATED WATER OF CERTAIN CITIES

City	No. of Samples	Type of Filtration	Average Number of <i>B. coli</i> per Hundred C.C.	
			Raw Water	Filtered or Treated Water
Toledo, Ohio	342	Mechanical	804	0.02
Minneapolis, Minn.	418	Mechanical	75	0.1
Grand Rapids, Mich.	365	Mechanical	92	0.3
Cincinnati, Ohio ..	240	Mechanical	1,175	1.4
Birmingham, Ala. ...	205	Mechanical	196	1.0
Binghamton, N. Y.	174	Mechanical	400	0.2
Columbus, O.	420	Mechanical	59	1.2
Washington, D. C.	348	Mechanical	606	1.3
Providence, R. I.	600	Slow sand	2,501	1.4
Reading, Pa.	138	Slow sand	732	4.3
Baltimore, Md.	306	Slow sand	68	5.8
Richmond, Va.	237	Alum and calcium hypochlorite	1,349	2.5
		Alum and calcium hypochlorite	460	8.0

Following a sanitary survey of the cities and towns in the basin of the Great Lakes, I recommended, among other things necessary, that a standard for filtered or treated water be established which should be a minimum requirement for the prevention of the spread of water-borne disease in interstate traffic, and that a standard of not more than 2 *B. coli* per 100 c.c. of water, taking the average of many samples by the Phelps' method,¹ should be adopted.

The surgeon general of the United States Public-Health Service in 1913 appointed a commission, consisting of the most eminent experts in the United States, to fix a standard for water-supplies used by common carriers in interstate commerce. This commission recommended four negatives out of every five tests of 10 c.c. each or the equivalent of 2 *B. coli* per 100 c.c. reckoned by Phelps' method. This standard was to be a minimum to prevent the spread of water-borne disease in interstate traffic and was purposely lenient because of the difficulty of enforcing a more rigid standard over the wide area from which common carriers in interstate commerce must secure their water-supplies.

Allowing a sufficient margin of safety, filter plants with a good raw water should produce effluents of less than 2 *B. coli* per 100 c.c. and it is my opinion that a modern water purification plant which delivers an effluent which has more than 2 *B. coli* per 100 c.c. is either inefficiently operated or is dealing with a raw water which imposes an unreasonable burden on the plant. Accepting tentatively the standard of less than 2 *B. coli* per 100 c.c. as a good drinking water, although perhaps not an ideal or a safe drinking water at all times, the results indicate

that this standard is attained by both rapid and slow sand plants, even with a very bad raw water. Cincinnati and Washington, D. C., are good examples of each type.

TABLE 2.—SHOWING BY MONTHS THE AVERAGE NUMBER OF *B. COLI* PER HUNDRED C.C. IN BOTH RAW AND FILTERED WATER IN WASHINGTON, D. C.

Month	Number of Days' Samples	Average Number <i>B. coli</i> per 100 c.c.	
		Raw Water	Filtered Water
1913			
January	25	4,582	7.4
February	23	502	1.0
March	25	2,871	0.5
April	26	20,910	4.1
May	26	661	0
June	25	910	0
July	26	5	0
August	24	88	0
September	25	412	0.5
October	27	622	4.7
November	23	1,167	0.5
December	25	538	0.5
1914			
January	25	640	0
February	23	211	0.5
January, 1913, to February, 1914.	348	2,501	1.4

Washington, D. C., has a slow sand filtration plant. There is a large reservoir capacity, and some alum is used in times of high turbidity. No hypochlorite or chlorin is used at any time. The general average for the Washington plant for 348 samples shows 1.4 *B. coli* per 100 c.c., which must be classed as a very good effluent. A close study of the results for individual months shows that there is a great fluctuation in the character of the raw water. There was a bad raw water in January, 1913, and April, 1913, and the results show that this unusual burden was probably too much for the purifying capacity of the plant.

TABLE 3.—SHOWING BY MONTHS, AVERAGE NUMBER OF BACILLUS COLI PER HUNDRED C.C. IN BOTH RAW AND TREATED WATER IN CINCINNATI

Month	Number of Days' Samples	Average Number <i>B. coli</i> per 100 c.c.		
		Raw Water	Filtered Water	
			Without "Hypo"	With "Hypo"
1913				
September	28	964	2.1	...
October	31	358	1.5	...
November	30	1,990	2.7	...
December	31	1,841	3.0	...
1914				
January	31	1,232	9.1	0.6
February	28	1,260	3.5	1.2
March	31	825	2.4	0.05
April	30	933	20.0	0.4
September, 1913, to April, 1914	240	1,175	5.6	1.4

The Cincinnati plant utilizes plain sedimentation followed by coagulation and mechanical filtration. Sulphate of iron and caustic lime are used, the latter to assist the action of the iron sulphate and not for softening purposes. Calcium hypochlorite is added to the filtered water for about five months in the year. Hypochlorite is used during January, February, March, April and May, which covers the period of muddy water and high bacterial counts.

1. Phelps, Earle B.: A Method for Calculating the Number of *B. coli* from the Results of Dilution Tests, Reports and Papers of the American Public Health Association, 1907, x. xiii, Part 2, pp. 9-13.

An efficiency of 98 per cent. with a raw water containing 500 *B. coli* per 100 c.c. would give an effluent containing 10 *B. coli* per 100 c.c. This could not be considered safe water, especially if this were an average for a considerable period, because, of necessity, the maximum and other days included in the period would show greater pollution than 10 *B. coli* per 100 c.c. Ninety-nine and one-half per cent. efficiency with 500 *B. coli* per 100 c.c. in the raw water would leave 2.5 *B. coli* per 100 c.c. in the effluent. Thus, even with the highest limit of filter efficiency which may be expected in practice, raw water with 500 *B. coli* would not reduce the limit of what may be considered a reasonably safe effluent.

Degree of Pollution in the Raw Water	Percentage of Bacteria Removed by Plant	Result
500 <i>B. coli</i> per 100 c.c.	98	10 <i>B. coli</i> per 100 c.c.
500 <i>B. coli</i> per 100 c.c.	99	5 <i>B. coli</i> per 100 c.c.
500 <i>B. coli</i> per 100 c.c.	99.5	2.5 <i>B. coli</i> per 100 c.c.
200 <i>B. coli</i> per 100 c.c.	98	4 <i>B. coli</i> per 100 c.c.
200 <i>B. coli</i> per 100 c.c.	99	2 <i>B. coli</i> per 100 c.c.
100 <i>B. coli</i> per 100 c.c.	98	2 <i>B. coli</i> per 100 c.c.

A close study of water-supply statistics will show that if the raw water exceeds 500 *B. coli* per 100 c.c. the filter plant is likely to be overtaxed and produce an effluent with an average of more than 2 *B. coli* per 100 c.c., unless extraordinary assistance is given the plant in the way of large storage, preliminary filters and especially the liberal use of chlorin or hypochlorite. When the raw water averages less than 200 *B. coli* per 100 c.c. the plants seem able to reduce this count to less than 2 *B. coli* per 100 c.c. without extraordinary assistance.

The raw water should be of such character that after reasonable purification (not demanding extraordinary efficiency every hour of every day in the year) the effluent would show a satisfactory average.

Reasonable purification of drinking water is the degree of efficiency which may be expected of standard types of filtration plants, properly designed and constructed and efficiently operated. This may be rated as the removal of from 98 per cent. to 99.5 per cent. of the bacteria. This reasonable purification is not construed to include chlorination. In my opinion, raw water should be of such a character that a standard type of filtration plant properly designed, constructed and operated, could consistently produce therefrom a reasonably safe effluent without recourse to chlorination. I am further of the opinion that chlorination should be reserved to increase the necessary margin of safety in handling polluted water, to cope with fluctuations in the character of the raw water and to protect against accidents to the plant or interruptions in its ordinary efficiency.

The question becomes one of the size of the margin of safety. With water of 500 or more *B. coli* per 100 c.c. there is practically no margin of safety. With raw water of 100 *B. coli* or less per 100 c.c., there is an ample margin of safety, and by the use of chlorination an ideal drinking water with almost entire absence of *B. coli* may be expected. A standard of 500 *B. coli* per 100 c.c. for raw water would necessitate the use of chlorination or some other extraordinary assistance to filtration processes in order to secure an effluent of less than 2 *B. coli* per 100 c.c.

It is clear that the standard of 500 *B. coli* should only be considered as a maximum and not as an average. The exact limit of safety in raw water probably falls between the maximum of 500 *B. coli* and 100 *B. coli* per 100 c.c., but it is difficult to fix.

There is a strong tendency in America to accept any raw water, however bad, as a source of supply for a municipal filtration plant. This often imposes an unreasonable burden and responsibility on the water purification plant. Now, filter plants are not infallible. They are mechanisms which must be properly constructed and efficiently operated under careful bacteriologic control in order to secure a safe effluent. They are operated by human agency and subject to the results of human error. It is true that properly constructed and efficiently operated filter plants can produce safe water from a bad raw water, especially by the use of hypochlorite or liquid chlorin as an adjuvant. The responsibility of effecting such purification every hour of every day in the year is unreasonable and unfair. Many plants are now struggling with a raw water of such a character that a safe effluent is obtained only at the price of eternal vigilance, perfect operation every day in the year, and the free use of auxiliary chemicals. The raw water demanding such extraordinary treatment is like a sword of Damocles constantly threatening disaster. There is no margin of safety under such conditions.

I believe that a sufficient margin of safety should be given to all filter plants by reducing the pollution of the raw water to a point at which it would not impose an unreasonable burden or responsibility on the plant.

While prevention of all pollution is not feasible, control of pollution and its reduction in certain areas is imperatively necessary. In grossly polluted waterways used as sources of public-supply the reduction should be to a point somewhere between 500 and 100 *B. coli* per 100 c.c.

How far shall we go in providing a proper margin of safety? This depends largely on the cost.

The pollution, for example, of the Niagara and Detroit Rivers reaches to thousands of *B. coli* per 100 c.c. of water, as shown by the Progress Report of the International Joint Commission. The cost of the sewage treatment measures which would be necessary to reduce existing pollution to a standard of 500 *B. coli* per 100 c.c., would not be greatly increased if reduction to 100 *B. coli* were carried out. In other words, the cost of removing 75 per cent. of the *B. coli* in sewage is considerable, but the cost of removing an additional 15 per cent. or 20 per cent. would not be great. The removal of the additional 15 per cent. or 20 per cent. would be little more than the cost of the additional hypochlorite of lime necessary.

It is not deemed advisable to state definitely at this time what percentage of *B. coli* in the crude sewage of Detroit or Buffalo must be removed in order to bring the water in the lower river below 500 *B. coli* per 100 c.c. A study of the degree of pollution, however, will show that the reduction necessary will be at least 75 per cent. To provide a proper margin of safety the *B. coli* in the raw water should be reduced to a point somewhere between 500 and 100 per 100 c.c. Judging from the pollution found in the lower Detroit River this would correspond to an elimination of *B. coli* in Detroit sewage of from 75 per cent. to 95 per cent. As pointed out in a preceding paragraph the difference in cost between 75 per cent. removal of *B. coli* and the higher percentages up to 95 per cent. is relatively slight and well worth the expenditure in providing a proper margin of safety.

THE LATE MANIFESTATIONS OF INHERITED SYPHILIS

WITH ESPECIAL REFERENCE TO ARTERIAL DISEASE *

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Strictly speaking there is no inherited syphilis. Congenital syphilis better describes the condition, but even this does not convey the idea that the condition is in reality an acquired antenatal infection, the spirochetes being present in the placental blood. Many years of usage, however, have given these terms a permanent place in medical nomenclature.

It has long been known that syphilis is the most common cause of fetal death and that many of the children who do not succumb to its effects during the first few months carry its mark throughout life. But so vague and misleading are the symptoms of syphilis hereditaria tarda that except for the cases of interstitial keratitis, the diagnosis is one of the most uncommon in medicine. Yet the number of persons with an inherited infection perhaps equals those with acquired syphilis. The recognition of this condition is made more difficult by the frequent absence of the stigma we commonly associate with congenital syphilis. The key to the puzzle often lies in the family history. In addition to the points usually covered, inquiry should always be made as to the health of all living members. In no other class of patients does this part of the anamnesis attain such great importance. The history of paternal death from apoplexy or sudden heart-failure in early life means syphilis in the vast majority of cases, as does death from paresis, tabes or aneurysm, and in an obscure case we will do well to consider the possibility of congenital lues in our patient. Yet parental longevity is no guarantee against syphilis, as the grandmother of one of my patients was known to have been infected by her husband in middle life, and, though she subsequently gave birth to two imbecile children and had leg ulcers till the time of her death, she lived to be 93. I have recently obtained a strongly positive luetin test in a man of 91 who is recovering from a slight stroke of apoplexy. He had what was probably an urethral chancre fifty years ago.

Several times the first clue came from the statement that the mother had had several miscarriages and perhaps lost a number of infants in early life. In one instance it was ten years before it occurred to me that a frail little unmarried woman who was always ailing and seemed to have no resistance, might have had a congenital infection. She had a perfectly compensated mitral stenosis and aortic regurgitation, and gave a vague history of rheumatism when a child. Her mother had died suddenly at 46 and her father had also died young. Though there had been a large family, she was the only one living. Her luetin test was positive, one Wassermann weakly positive, and the improvement in her general condition after neosalvarsan and mercury was very gratifying. As she explained it she "felt like a real woman."

Fournier¹ states that congenital syphilis in a parent has the same effect on the fetus and infant that acquired syphilis has. He detected signs of active lues

in 14 per cent. of the children of 116 families in which one parent had congenital syphilis. Of eighty-one pregnancies occurring in families in which one parent was an heredosyphilitic, death resulted before or soon after birth in 59 per cent.

As most of the statistics concerning congenital syphilis were made before the day of the Wassermann and luetin tests, it seemed desirable to apply them to a series of persons whose parents were either clinically syphilitic or had a positive Wassermann or luetin reaction.² Many of the cases belonged to the latter group and in a number of instances the parents were not conscious of ever having had lues. Tabes, paresis and aortic disease were considered as evidence of syphilis. A few observers have reported the results of the Wassermann test on whole families, but, so far as I know, the luetin test has not been used in conjunction with the Wassermann in any such series.

Luetin is the name given by Dr. Noguchi of the Rockefeller Institute to an emulsion of killed spirochetes prepared by him, which, when injected between the layers of the skin, produces a reaction in syphilis which is specific for the disease. Dr. Noguchi very kindly supplied the luetin for the tests.

In all, 68 persons—adults and children—were tested from 32 families. It so happened that no infants were included.

TABLE OF RESULTS OF TESTS IN THIRTY-TWO FAMILIES

	No. of Individuals	No. Wassermann Tests	Per Cent. Wassermann Positive	No. Luetin Tests	Per Cent. Luetin Positive
Irrespective of health	68	52	17	68	59
Apparently healthy (robust)	33	22	0	33	39
Those with obvious ailment* 35	35	30	43	35	77

* Either the Wassermann or luetin was positive in 31, 88 per cent.

It is seen from the accompanying table that 56 per cent., irrespective of their condition, had a positive luetin test and but 17 per cent. a positive Wassermann. Thirty-three appeared perfectly healthy and of this number 39 per cent. gave a positive luetin but in none was the Wassermann positive. The remaining thirty-five deviated more or less from our standards of health, but only a small minority would be classed with what we commonly think as congenital syphilis. For instance, the "Hutchinson triad" of deafness, interstitial keratitis and peg-shaped teeth, was uncommon, as were enlarged epitrochlear glands. Several had the "Olympic forehead" but the typical saddle-shaped nose was not seen. Anemia, malnutrition, extreme nervousness and disease of the aorta and its valves were the most common diagnoses. Very severe headache was the chief complaint in a number of instances, while others had vague pains, called "rheumatism." One patient, a man of 47, had an angioneural arthritis as described by Solis-Cohen,³ another had Raynaud's disease. Of this group, 43 per cent. gave a positive Wassermann and 77 per cent. a positive luetin. In this latter group, however, there were four whose Wassermann reaction was strongly positive with a negative luetin test. If these be added to the twenty-seven in whom the luetin was positive, we find that 88 per cent. gave either a positive luetin or Wassermann reaction.

2. Most of the Wassermanns were made at the laboratory of the State Board of Health under the direction of Professor Conn of Wesleyan University. I am indebted to Dr. Jessie W. Fisher for making a number of tests for me at the State Hospital for the Insane in Middletown, and to Dr. John A. Fordyce of New York for several tests made in his laboratory. A few were also made by Dr. H. C. Russ.

3. Solis-Cohen: Am. Jour. Med. Sc., 1914, cxlvii, 228.

* Read before the Section on Practice of Medicine at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Fournier: Treatment and Prophylaxis of Syphilis, New York, Rebman Company, 1907.

Six children from three families in which one or both parents had inherited syphilis were studied. Three, or 50 per cent., had a positive luetin test. Two grown sons in good health did not react to either test. One rather frail boy had a negative luetin and a doubtful Wassermann. Of the other three, one, an exceedingly nervous girl of 16 who had chorioidal scars in one eye, gave a positive luetin and a doubtful Wassermann. Her sister with dactylitis had a positive luetin and a weakly positive Wassermann. They were both prema-

Mr. X's wife gave the following interesting history. Her parents are living and said to be well. She was never strong as a child and has always been subject to severe headaches which were not relieved by glasses. Her teeth were very poor. About six years ago she began to have typical attacks of Raynaud's disease. Her first pregnancy resulted in a still-born child at term, the second one miscarried at the third month, the next, the delicate boy whose history has been given, and the fourth a girl not as yet tested, has an "Olympic" forehead. Her family history contains the following noteworthy points.

Her oldest sister became deaf in early womanhood and had a severe ulceration of the throat of unknown origin. As a child she had some indefinite sickness, accompanied by pyrexia, which was called "malaria." Another sister had a number of operations for bone-disease thought to be tuberculous. A brother, aged 25, who has very marked frontal eminences, became deaf in his late teens, and at about 20 it is stated that a "film" appeared over both eyes and though he was almost blind for a time, he recovered under treatment. Mrs. X gave a negative Wassermann reaction but a very positive luetin test. It would seem that both Mr. and Mrs. X were heredosyphilitics.

The next family resembles the preceding one in several particulars.

Mr. Z, a man of 36, who knew of no venereal infection, complained of "weak feelings," pressure in his head, and of great nervous exhaustion. He had "doctored for uric acid" a great deal. Ten years previous to being seen he had to stop work for nearly a year, because he could not think clearly and easily. He was very easily exhausted. Once he had a weak spell and had to be taken to a hotel. He was fearful his heart was weak. He occasionally had a catch in the left side, and, as he expressed it, was "easily wilted." Eighteen months previously he had to stop work for three months. He found his duties, which were those of office work, arduous because of difficulty in concentrating. When the weak spells came on, the left side of the body felt numb and he experienced a drawing sensation to the left side. For the previous four years much of the time he has had intense headaches which are worse at night. His head always felt bad on waking in the morning. He also suffered much from

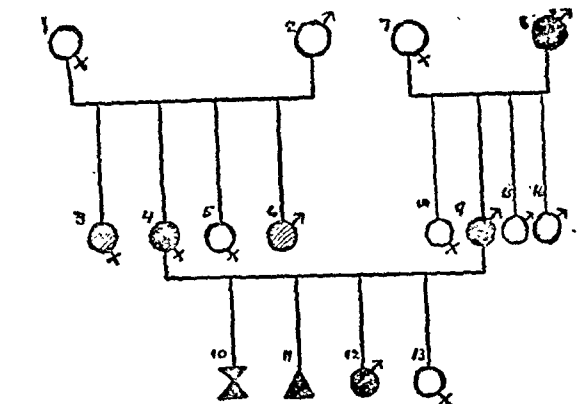


Chart 1.—Pedigree of family of Mr. X. In this and the following charts the circles indicate individuals, sex being shown by the regular signs (♂ for male, ♀ for female). Black circles represent persons known to have syphilis; shaded circles denote suspicious history or physical signs; black triangles indicate miscarriages, and double triangles stillbirths. 1 and 2. Living; not examined; said to be in good health. 3. Living, aged 42; malaria (?) as child; severe ulceration of throat; totally deaf. 4. Living, aged 40; very severe headaches all of life; Raynaud's disease; Wassermann—; luetin+. 5. Living, aged 38; many operations in girlhood for some "bone disease." 6. Living, aged 25; "Olympic head"; deafness about twentieth year; interstitial keratitis. 7. Died, aged 54; tumor of kidney. 8. Apoplexy at 42; paresis (?). 9. Living, aged 39; exceedingly nervous; laryngeal lesion improved by neosalvarsan and mercury; luetin+. 10. Stillbirth. 11. Miscarriage. 12. Living, aged 9; very frail; Wassermann±; luetin+. 13. Living, aged 2; very prominent forehead; not tested. 14, 15 and 16. Not examined; said to be in good health.

ture babies, as were two others of that family. The third, a delicate boy with pyrexia, is of especial interest.

Tuberculosis had been diagnosed in this boy, aged 9, because of a more or less constant pyrexia which was associated with weakness and anorexia. When he first came under my observation he showed signs suggestive of enlarged bronchial glands, and I concurred in the diagnosis. The heart was free from murmurs but showed a slight sinus arrhythmia. Shortly thereafter the father (Mr. X) came to me for an examination of his lungs because an eminent laryngologist in New York strongly suspected laryngeal tuberculosis. No evidence of any pulmonary lesion was found. As the patient, who was a man of intelligence, not only denied any venereal disease, but stated he had never had intercourse with any one save his wife, syphilis seemed out of the question. Moreover, laryngologically, it was not the picture of syphilis. He stated that his father had died of paralysis at 56, but further questioning elicited the fact that he had had his first stroke of apoplexy when he was 42. (One may assume that apoplexy before 50 usually means syphilis, between 50 and 60 frequently syphilis and after 60 possibly syphilis.) His father also developed delusions—accused his wife of infidelity, etc.—that were suggestive of paresis. I thereupon gave Mr. X the luetin test and a positive reaction resulted. Under neosalvarsan and mercury injections Mr. X's throat improved markedly. As his father possibly had paresis it is of interest that he has always been exceedingly nervous, once having to give up business because of nervous prostration. His little son gave a negative reaction to the intradermic tuberculin test, but reacted strongly to luetin.

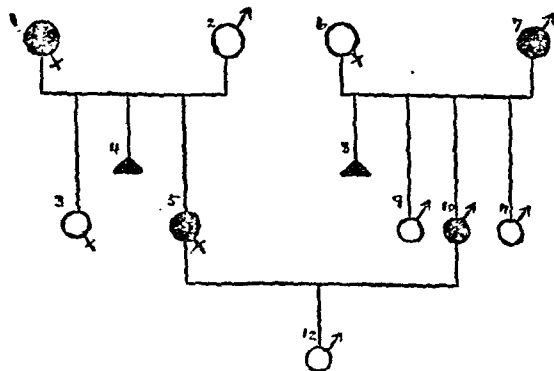


Chart 2.—Pedigree of family of Mr. Z. 1. Living, aged 64; hypertension; several slight strokes of apoplexy; luetin+. 2. Living, aged 70; angina pectoris; luetin—. 3. Living, aged 44; apparently well; Wassermann—; luetin—. 4. Living, aged 38; frail since girlhood; pulmonary tuberculosis; Wassermann—; luetin+. 5. Living, aged 70; good health. 6. Apoplexy at 68; had had tabs for several years. 7. Miscarriage. 8. Living, aged about 40; extremely nervous; not examined. 9. Living, aged 36; neurasthenia with severe headaches; Wassermann—; luetin+. 10. Living, aged 18; pleurisy; Wassermann—; luetin—. 11. Living, very robust, aged 14; Wassermann—; luetin—.

hot flashes. The man was well nourished and looked the picture of health. The physical examination was absolutely negative, and from a purely clinical point of view was a case of neurasthenia. In his family history, however, it was found that his father, who died at the age of 68, had had locomotor ataxia for a number of years, and before his death two strokes of apoplexy. An elder brother has been extremely nervous and for that reason had to give up his

business. A younger brother had very severe headaches for a number of years in early life, occasionally so intense that he would fall to the ground. His mother had had two miscarriages. A number of Wassermann tests by two different laboratories were negative, but the luetin test was strongly positive before giving treatment and also at present. Following several injections of neosalvarsan and mercury he was completely relieved of all his symptoms. Unfortunately, the spinal fluid was not examined.

Mrs. Z has been very delicate since girlhood. Though ambitious, her strength fails her and she has always been a "weakling," but without obvious cause. Recently a very slight apical tuberculosis was discovered, but it hardly seemed enough to account for her marked loss of vitality. Nor did a course of tuberculin treatment benefit her. Two different serologists reported the Wassermann negative but

It has long been known that acquired syphilis attacks the aortic arch with great frequency, but very little has been written concerning the rôle played by congenital syphilis in this respect. Rebaudi⁴ found changes in the aorta similar to those observed in acquired syphilis in thirteen out of seventeen still-born children. Roch and Weisner⁵ found similar changes in 59 per cent. of their cases. In five cases Rebaudi demonstrated the spirochetes.

In several of my cases there was a lesion at the aortic valve.

In four instances I was able to prove the presence of latent syphilis in one or both parents by the luetin or Wassermann test. In several others the absence of any venereal infection and the sudden death of a parent in early life suggested the inherited nature of their infection.

A frail lad of 24 was brought to me because it was feared that tuberculosis might be the cause of his weakness, dyspnea and chest pains. The lungs were normal but the usual signs of aortic insufficiency were present. The venereal history in both patient and his father was negative but he gave a positive luetin test as did his mother and one of two younger sisters. The father gave a negative luetin but a weak positive resulted when the test was repeated. In all, the Wassermann was negative. The only suspicious thing in the history was the fact that his mother had had several miscarriages.

Biermann⁶ has reported an interesting case of arteritis of the peripheral vessels associated with dilatation of the aortic arch in a young woman of 19 with congenital lues. The lesion of the aorta was diagnosed roentgenographically. In two of my cases of congenital aortitis the Roentgen ray showed no dilatation of the arch. In a third, presumably congenital, a well marked dilatation was revealed.

Clinicians the world over have observed families in which many of the members succumbed to heart or arterial disease. This is commonly attributed to the fact that they have inherited poor material for their arterial wall and that as a result of the vicissitudes of life the artery gives way. So far as I know, it has

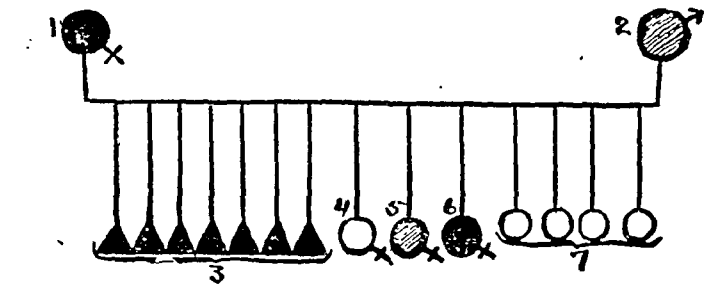


Chart 3.—Pedigree of family showing cardiac lesions. 1. Living, aged 65; aortitis; luetin +. 2. Husband died, aged 58; angina pectoris. 3. Severe miscarriages (sequence of pregnancies not known). 4. Died, aged 3 months. 5. Died, aged 30 +; decompensation following aortic regurgitation. 6. Living, aged 30; angina pectoris; aortitis (?); luetin +. 7. Not examined; one has precordial pain.

the luetin was very strong. Her father has had angina for several years and her mother, though apparently well, has hypertension and has had several strokes of apoplexy. Mrs. Z's mother gave a positive luetin test, but in her husband it was negative. Mr. and Mrs. Z have one boy aged 14 who is healthy and in whom both tests were negative.

One of the most common effects of congenital syphilis is its interference with the normal development of some particular part of the body. It may be mental or physical. It may involve one organ or a group of organs. There are cases on record of the complete transformation of a thoroughly incorrigible and vicious child by specific treatment. In addition to this, Fournier calls attention to what he very happily terms the "fragility of the system" as evinced by the proneness to diseases of all sorts, but especially tuberculosis. This is a very important group, of which Mrs. Z just referred to is an excellent example. "They frequently die," Fournier says, "at an early age 'of nothing at all,' so to speak, without any definite disease, and in many of such cases the most careful autopsy does not reveal the cause."

In some of my patients the dystrophies which Fournier mentions were evident. In one family of which the father had acquired syphilis before marriage, each of two daughters had a short arm and a son with interstitial keratitis stammered badly and had bilateral hernia.

In another family in which the father, a congenital syphilitic, had angioneural arthritis, a son was a cryptorchid and a daughter suffered from vasomotor disturbances of the hands and feet similar to those of her father.

Hubner was the first to direct universal attention to the study of the relationship of specific disease to the blood-vessels, and to-day it is generally appreciated that the majority of the clinical symptoms of syphilis are caused by changes in the arteries with their secondary consequences.

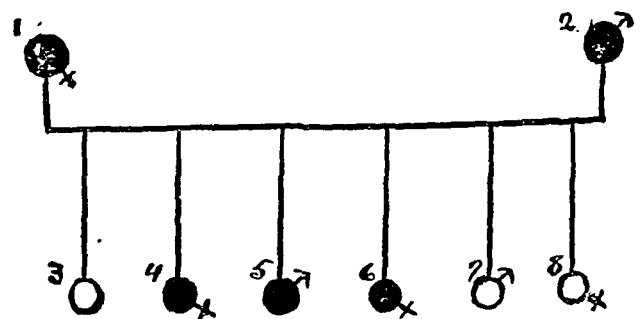


Chart 4.—Pedigree of family also showing cardiac lesions. 1. Mother living, aged 38; hypertension; Wassermann +; luetin ±. 2. Father died, "stroke," aged 35. 3. Died in infancy. 4. Living, aged 17; apparently well; Wassermann —; luetin +. 5. Living, aged 14; frail; aortitis; Wassermann +; luetin +. 6. Living, aged 8; internal strabismus; Wassermann +; luetin +. 7. Living, aged 6; frail; Wassermann ±; luetin —. 8. Living, aged 2½; apparently well; Wassermann not done; luetin —.

not been suggested that syphilis might be an important factor in these cases, yet several of the families studied suggest this possibility.

Attention has been drawn to the part played by syphilis in cardiac lesions, by Warthin⁷ who concludes

4. Rebaudi: *Monatschr. f. Geburtsh. u. Gynäk.*, 1912, xxxv, 681; abstr., *THE JOURNAL A. M. A.*, Aug. 10, 1912, p. 490.

5. Roch and Weisner, quoted by Longcope, W. T.: *Arch. Int. Med.*, January, 1913, p. 15.

6. Biermann, J.: *Deutsch. med. Wchnschr.*, 1911, xxxvii, 1157.

7. Warthin: *Am. Jour. Med. Sc.*, 1914, cxlvii, 667.

from his pathologic study "that syphilis, both congenital and acquired, is the most important etiologic factor in the production of cardiac disease, both myocardial and endocardial." From the clinical point of view, Schottmüller⁸ reports a positive Wassermann reaction in over 40 per cent. of his cardiac cases taken as a whole, irrespective of the lesion.

A robust man of 35, who considered himself to be in perfect health, came to me as he had been refused life insurance because of heart-disease. He had a well-marked aortic regurgitation which had given no symptoms. He had had neither rheumatism nor venereal disease so far as he knew. Both the Wassermann and luetin tests were positive. His father had died of tetanus and his mother was living and in

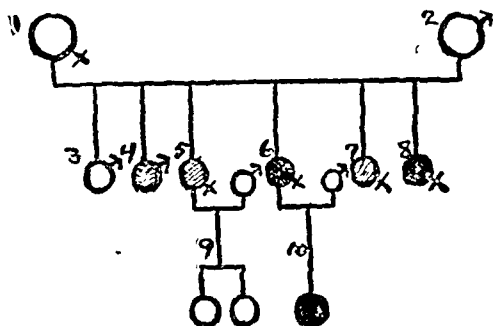


Chart 5.—Pedigree of family showing various disorders ascribable to syphilitic infections. 1. Died, aged 73; nephritis. 2. Died aged 50+; nephritis. 3. Died in infancy. 4. Living, aged 50+; hypertension. 5. Living, aged 50+; hypertension; deafness in late teens. 6. Living, aged 48; neurasthenia; deafness in late teens; Wassermann—; luetin +; only daughter an epileptic (10), dying at 22. 7. Died, "withered kidney"; aged 28. 8. Living, aged 45; hypertension; neurasthenia; deafness in late teens; Wassermann ±; luetin +. 9. Apparently healthy twins.

good health. Inquiry, however, developed that his father had had a slight "stroke" in his fiftieth year. His mother gave a very strong luetin reaction.

The following family is of especial interest as one member had slight angina pectoris which, I believe, has not been ascribed to congenital syphilis.

A young woman, aged 27, whose husband had been in excellent health at the time of his death from an accident a few weeks after his marriage, consulted me in 1910, with a statement that she had been doctoring for the last six years for "rheumatism." This proved to be pain of a sudden character between the shoulder blades. Tuberculosis had been feared. The physical examination was practically negative, except for a very few râles over the right chest anteriorly at the border of the sternum, and a slight tenderness over the first sternochondral junction on the left side as well as over the midthoracic vertebrae. No definite diagnosis was made at that time. The patient seemed neurotic and not very ill. Eighteen months later she said "the rheumatism had been in the left shoulder and went through the heart." She complained of soreness through the upper left side of the chest and of a very slight cough. There were still a few râles in the secondary right space anteriorly near the sternum. (I was puzzled because the pain was on the left and the only abnormal sounds were on the opposite side.) About a year later she experienced some dyspnea in going upstairs and a soft systolic murmur was present in the second left interspace, but it was not accompanied by anemia. The upper outer border of the left trapezius muscle was found to be somewhat tender. Even at this time I did not appreciate what the condition was, as the murmur was present only in the second left space and I did not then know that an aortic systolic murmur may be heard only in the second or third left interspaces. On reviewing her family history I found, however, that her mother had had several miscarriages and that her father had had an enlarged heart and

had died from angina pectoris at 58. The mother was apparently in good health, except for "rheumatism" through both shoulders and the upper part of the sternum. On examination it was found that she had a systolic murmur at the base of her heart. A sister had died from cardiac decompensation secondary to an aortic regurgitation. Both my patient and her mother gave a positive luetin test. The mother's "rheumatism" subsided after a course of inunctions, and the daughter's disappeared after neosalvarsan and mercury. Two other "heart families" were met with.

A man of 53, a policeman by occupation, complained of dyspnea on exertion. He knew of no venereal infection. His heart was enlarged and a systolic murmur was present which was loudest at the base. The systolic blood-pressure was 210; diastolic 110. His father had suddenly dropped dead in his forty-sixth year, and a brother had died from a "shock" when 48. Two Wassermans were negative but the luetin test was strongly positive.

The perfect compatibility over a period of many years, of an occult lues and good health is here shown. This man had enjoyed excellent health for over fifty years, yet the disease which was to rob him of his rightful expectancy of life was slowly advancing but without sign or symptom. Had a Wassermann or luetin test been possible in his early life and thorough treatment instituted, he would be living to-day in all probability. The next family further demonstrates the importance of testing the children in all cases of sudden parental death in early life.

A boy aged 14, who is not anemic, has a well-marked systolic murmur over the base of his heart, loudest on the right and extending up to the clavicle. His father suddenly dropped dead when 35 years old. His mother, aged 38, has hypertension. The boy, his mother and one sister with internal strabismus, have very strong Wassermans, and in a younger brother the test was doubtful. An older sister gave a negative Wassermann but a positive luetin.

It has long been recognized that syphilis may cause arterial hypertension, and because of the steady increase in the mortality from arterial and kidney diseases it is important to ascertain how important lues, and especially congenital lues, is in this condition.

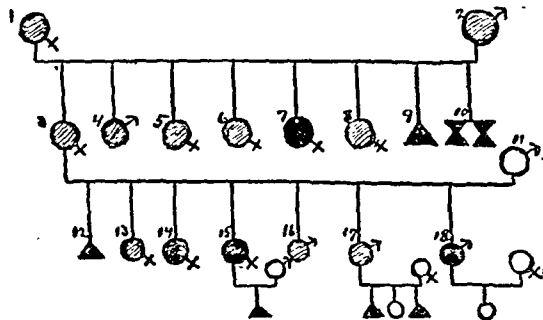


Chart 6.—Pedigree of family with cardiovascular disease in three generations. 1. Maternal grandmother died, aged 64; "apoplexy." 2. Her husband died of a "fatty heart," aged 64. 3. Died of acute dilatation of heart following pneumonia, aged 50. 4. Died, aged 17 "apoplexy." 5. Died, aged 38; "heart disease"; no rheumatism. 6. Living, aged 63; hypertension; several strokes of apoplexy; Wassermann —. 7. Living aged 60+; apparently well; Wassermann —; luetin +. 8. Living, aged 58; was a 7-month baby; not examined; has much dyspnea. 9. Miscarriage. 10. Twins; stillborn seventh month. 11. Husband of No. 3; died of "tumor of throat." 12. Miscarriage. 13. Living, aged 45; hypertension; when a child had an ulcer of rectum very slow to heal; Wassermann —; luetin —. 14. Living, aged 43; hypertension (S. B. P. 270); Wassermann —; luetin +. 15. Living, aged 39; neurasthenia; Wassermann —; luetin +. 16. Died, aged 16; heart disease; no rheumatism. 17. Living, aged 37; not examined; has a chronic "sore" near anus. 18. Living, aged 36; apparently well; Wassermann —; luetin +. It is noteworthy that 60 per cent. of the pregnancies of the third generation resulted in miscarriages.

Hintzelmann,⁹ whose original article I have not obtained, believes that congenital syphilis often causes

8. Schottmüller: *Therap. d. Gegenw.*, 1913, xv, 337.

9. Hintzelmann: *Ztschr. f. Kinderh.*, 1913, ix, No. 1.

chronic nephritis. Cassel¹⁰ found renal changes in ten out of twelve syphilitic infants at necropsy and Murphy and Powers¹¹ state that the affection is, as a rule, a slow chronic nephritis, sometimes latent, sometimes showing acute periods.

Another interesting family is that shown in the following record:

The patient, an unmarried woman of good repute, aged 45, has suffered from extreme nervousness for a number of years and now has a systolic blood-pressure of 160. Her father died at about 58 of nephritis and the mother of the same malady at 73. One brother living has hypertension and an hypertrophied heart. Two sisters are married—both are extremely nervous. One had a child, an epileptic, who died at 22. The other sister has hypertension. A fourth sister died at 28 of a "withered kidney." All three living daughters became gradually deaf during their late teens. My patient had a doubtful Wassermann test and a very positive luetin. The sister, who was the mother of the epileptic child, gave a negative Wassermann but a positive luetin.

The next is the most remarkable family, as heart and arterial disease are present in three generations.

A little over a year ago I was called to attend an unmarried woman, aged 43, who was suffering from a greatly embarrassed heart-action and a systolic blood-pressure of about 270. She had lost a brother aged 16 from heart-disease, which was not secondary to rheumatism. Another brother, aged 37, is stated to have had some sort of ulcer at or near the rectum for several years, and periodically he "sheds" part of the skin from the soles of his feet. Two of his wife's three pregnancies have resulted in miscarriage. A sister, aged 45, also unmarried, has hypertension, and as a girl had an ulceration of the rectum which only healed after a very long course of treatment and was followed by a slight stricture. A married sister has suffered from headaches for years, in addition to a number of symptoms common to neurasthenia. A younger brother, aged 36, is apparently in good health. The three sisters and the apparently healthy brother all gave negative Wassermanns, but the sister with the highest blood-pressure, the neurasthenic, and the brother who seemed well, all gave positive luetin tests. The other brother has not been tested. The family history apparently gives the clue to the situation.

The father had died from a "tumor of the throat," the mother, from acute cardiac dilatation complicating pneumonia, at 52. Her first pregnancy resulted in a miscarriage. One of her brothers died of "apoplexy" at 17, and a sister who had not had rheumatism, of heart-disease at 38. Three of the mother's sisters—all unmarried—are still living. One appears to be in good health but gives a positive luetin test though her Wassermann is negative. Another, now past 60, has hypertension and several years ago had a slight stroke of apoplexy. A third, not as yet examined, was a 7-months baby and is stated to suffer severely from dyspnea on exertion. The maternal grandmother died of apoplexy at 64 and her husband at the same age of a "fatty heart."

It is especially fortunate that there were so many unmarried women in two generations, as this practically eliminates acquired infection.

This family suggests syphilis in three generations. There is no proof that the mother of the present generation, who died of cardiac dilatation after pneumonia, had lues, other than the presence of syphilis in her children. Of course it cannot be said that she might not have been infected by her husband, who may possibly have had syphilis. But the astonishingly large number of cardiovascular cases in her own generation and the positive luetin test in an unmarried

sister makes the assumption that she had a congenital (myocardial) syphilis almost a certainty.

In this connection the statement might be made that an underlying and unsuspected syphilitic myocarditis is probably a more frequent cause of cardiac death in the course of other infections than we have hitherto supposed.

It would seem from this investigation that the luetin test is of more value in detecting congenital infection of long standing than the Wassermann test. This is especially true when the disease is dormant. Emory¹² has also noted this fact. Whenever possible both tests should be employed as neither is infallible. Nor does a positive Wassermann or luetin reaction guarantee that the presenting symptom is due to syphilis. In four cases the luetin test was negative, while the Wassermann was positive. In one, both tests were negative. Had cholesterinized antigens been generally employed, it is quite possible that the percentage of positive results would have been somewhat higher; but the luetin test was positive several times even when fortified antigens were used. The ideal method of procedure is first to obtain blood for a Wassermann and then either give mercury by mouth for a week, when the luetin test should be made, or the interval may be shortened by an injection of mercury at the time the luetin test is given.

The torpid reaction, coming on in from ten days to three weeks is common. Since using mercury in conjunction with the luetin test the indefinite reactions are rare, nearly all going on to pustule formation.

Time will not permit the discussion of the luetin test *per se* as an indication for therapeutics when occurring without obvious lesion. Nor can treatment be considered other than to say that relief of symptoms has been complete in a number of cases in which the Wassermann was persistently negative with the luetin positive. In a few there was a slight recurrence several months later, which usually promptly responded to further treatment. Whether a cure in its strictest sense is possible, only time will tell.

CONCLUSIONS

1. We must accustom ourselves to think of syphilis as a family disease. But rarely is our patient the only one infected.

2. Over half of the children born of syphilitic parents, who survive infancy, give a positive luetin reaction. In nearly 90 per cent. of those with obvious ailment the Wassermann or luetin test is positive.

3. There is often nothing in the appearance to suggest lues and the symptoms are indefinite and often misleading.

4. Too much emphasis cannot be placed on the importance of a complete family history in every obscure case.

5. It seems probable that syphilis may be transmitted to the third generation.

6. Some cases of neurasthenia are due to congenital lues and can be promptly cured by specific treatment.

7. Syphilis appears to be an etiologic factor in certain of the families prone to heart and arterial disease.

8. Hypertension in middle life may be due to congenital lues.

9. Both the Wassermann and luetin tests should be employed as neither is infallible, the Wassermann being frequently negative in syphilis hereditaria tarda, the luetin occasionally so.

10. Cassel, quoted by Murphy and Powers (Footnote 11).

11. Murphy and Powers: *System of Syphilis*, Oxford Univ. Press, 1908, i, 358.

12. Emory: *Lancet*, London, 1914, i, 223.

10. The examination of all venereal sores for spirochetes and their prompt treatment, controlled by the Wassermann and luetin tests, would ultimately make congenital syphilis a medical curiosity.

It is with pleasure that I acknowledge a number of valuable suggestions in the preparation of this paper from both Dr. Noguchi and Dr. Ellis of the Rockefeller Institute.

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ABSTRACT OF DISCUSSION

DR. ROBERT N. WILLSON, Philadelphia: Because of Dr. Cabot's challenge to the effect that "if I would show him a mitral stenosis with an etiology other than that of rheumatism he would believe in it" I present to the Section two hearts, both showing, as late manifestations of hereditary lues, a high-grade stenosis of the mitral valve in addition to other extensive involvement. In the one case the latter consisted of a ruptured aneurysm of the thoracic aorta in a child of 4 years, and, in a second, of considerable patchy atheromatous involvement of the first portion of the aorta, though the aortic valve leaflets were normal. In neither case was there at any time an indication of "rheumatic" involvement in any of its forms. In both cases (the child and adult), one parent and probably both were syphilitic. I think the final test as to the direct etiology of such cases could and should be successfully demonstrated in the post-mortem discovery of the spirochetes, as well as by the Wassermann test during life. There would, however, seem to be little need for such an ultimate study in the specimens presented at this time. Dr. Stoll's paper brings to our attention once more the growing need of assigning to syphilis a place equally as prominent as that of rheumatism in the causation of valvular lesions, and a far more significant influence in the etiology of arterial lesions and consequent secondary changes in the muscle of the heart. I have seen many little children with no other sign of syphilitic parentage than fibrous, whipcord vessels, those of little old men and women. In fact I have come to regard arteriosclerosis in the child as highly indicative of hereditary lues, even in the absence of all other symptoms. If such a hereditoluetic survives and marries, his or her children are not unlikely to present congenital cardiac lesions which should be, though they often are not, attributed primarily to syphilis. Dr. Stoll has cited in his series an instance of mitral stenosis in a young adult female, presumptively luetic in origin. This case resembles closely in its clinical details the case in an adult represented by one of the specimens shown. One point seems to me well worth remembering in connection with these cases, namely, that many instances of arterial and cardiac disease are characterized as congenital or of unknown etiology, when a more thorough and painstaking study of the anamnesis would correctly label the lesions as heredosyphilitic or even acquired syphilis.

DR. A. C. GRIFFITH, Kansas City, Mo.: I have been using the luetin test for some time. When in New York a short time ago I asked Dr. Noguchi why it was that at times the luetin test was negative when we had a positive Wassermann? He answered that it was because the system was so saturated with the toxin or the poison from the spirochetes in the body that the luetin was rendered inert. If the patient was placed under treatment with mercury or salvarsan the tests all became positive.

The Many Sidedness of Science.—It is well that the sciences of nature hold out attractions to so many different types of mind, for the edifice of science is built of material which must be drawn from many sources. A quarry opened in the interest of one enriches all of these sciences. The deeper we can lay the foundations and penetrate into the nature of things, the closer are the workers drawn together, the clearer becomes their community of purpose, and the more significant to the welfare of mankind the upbuilding of natural knowledge.—Welch.

LATENT AND TERTIARY SYPHILIS IN DISEASES OF THE NOSE AND THROAT *

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The importance of the diagnosis of syphilis in any part of the body cannot be overestimated. In the primary and secondary stages, syphilis is a serious matter; in the tertiary stage of nerve lesions it is a calamity. Recent statistics state that 20 per cent. of treated patients and 40 per cent. of all afflicted with the disease later develop nerve lesions. Until recently, we were unaware that the spinal fluid in certain cases contained active manifestations of the disease when the blood was negative. To-day it is possible, not only to demonstrate spirochetes in the spinal fluid, but also to treat this important field with most promising results.

Tertiary lesions in the nose and throat require early diagnosis for two highly important reasons: first, because their presence demonstrates an active syphilitic process in functionally important organs, and, secondly, because the general systemic infection causing localized symptoms in the nose or throat may later develop still more serious lesions in the central nervous or arterial systems. Specific manifestations in the larynx, soft palate and nasal septum are rapidly destructive; thus it is highly important that they be recognized and properly treated before actual destruction takes place.

In certain virulent cases the destruction of these delicate organs is a matter of hours. From twenty-four to seventy-two hours may cause sufficient destruction to seriously impair their function for all time. Thus salvarsan, despite its marvelous rapidity and efficiency, can avail nothing if destruction has taken place before the diagnosis is made and the treatment given.

Symptoms of tertiary syphilis in diseases of the nose and throat include all manifestations of the disease which are of a destructive nature, and are not necessarily limited to the time of appearance with reference to the initial lesion. It is possible to have primary, secondary and tertiary syphilis at one and the same time. For example, an untreated chancre of the lip may develop into the malignant type and cause deep ulceration. When such a lesion is present, the delay in treatment allows a systemic infection which gives rise to secondary symptoms in the glands, skin, throat, etc. The moment an initial or secondary symptom becomes destructive to any serious amount of tissue, the lesion becomes a tertiary one. Thus, we have to all intents and purposes all three stages present at one time, that is, the original site of the infection as the primary stage, systemic manifestations in the glands, skin, throat, etc., as a secondary stage, and a beginning destructive process in the initial lesion as a tertiary stage. In this respect, also, so-called secondary lesions of the cartilaginous septum, which are not uncommon and are rapidly destructive in their action, are not secondary at all, but are true tertiary lesions despite the fact that they occur in the interval commonly regarded as the secondary period. Practically speaking, however, tertiary symptoms include all manifestations occurring after the commonly accepted secondary symptoms have passed.

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The ordinary tertiary symptoms in the field of the rhinologist and laryngologist are too well known to need further mention. In my opinion, they are far more common in diseases of the nose and throat than they are supposed to be. My experience and that of my friends has recently taught me to use great caution in making a diagnosis in a given case until syphilis has been eliminated as carefully as possible. To further this end, instructions have been given to do a Wassermann test on every patient admitted to the wards of the hospital on my service, and on every operative case in the outpatient department wherein syphilis might enter as a complication.

From a purely scientific standpoint, latent syphilis cannot exist. An individual either has the disease or he is entirely free from it. If spirochetes are present anywhere in the system, he has syphilis. If no spirochetes are present, the opposite condition is true. Symptomatically, however, there is often a quiescent period in the disease in which no active lesions are present, regardless as to whether the Wassermann test is negative or positive. For want of a better term, we may usefully and properly refer to this stage of the disease as "latent syphilis."

Latent syphilis is a particularly important matter in nose and throat practice inasmuch as operations in that field may rapidly change the latent disease into a very active one. This has happened to me in both private and hospital practice and has caused considerable distress to the patient and anxiety to the operator. To operate on a patient with latent syphilis without knowledge of its presence is a serious error and one which should be guarded against to the best of our ability. Judging from my experience and that of other Boston rhinologists, I strongly believe that we have no moral or legal right to perform a destructive operation of any magnitude on the nose or throat until a Wassermann test has been made. If doubt still exists in our minds as to the presence of syphilis because of an uncertain Wassermann test, we must proceed still further and make other tests which have proved to be valuable agents in the diagnosis of this disease. Operating on a patient with latent syphilis has exactly the same effect as the so-called "provocative test," but unlike that procedure, it has no power to overcome the mischief it has liberated. One of my cases, that of a cartilaginous transplant into the nose, developed a tremendous syphilitic reaction within forty-eight hours. The patient had shown two negative Wassermann reactions, one six months and the other one week before the operation. Forty-eight hours after the operation, the wound showed evidences of infection. The inflammation was not especially active for the first few days, but then a marked redness and swelling developed, which extended to both orbits. It had every appearance for a short time of erysipelas. Ice compresses soon reduced the extreme swelling, however, and after several weeks of active inflammation the pus discharge ceased. Then the nose from the nasal bones to the tip became moderately swollen, with a shiny, fiery-red color which gave a most unhealthy appearance. Hot poultices were applied without the desired results. Several incisions were made with the hope of liberating confined pus. None was obtained. The shiny, red color and swelling persisted for over four weeks, then gradually subsided and never returned.

Young children who have inherited syphilis in either the secondary or tertiary stages are beginning to receive

the proper attention which has previously been denied them. Many hospital clinics are now especially interested in this phase of the situation and astonishing results are being obtained. Of 111 cases admitted to the Children's Hospital in Boston, Lucas found 31 per cent. to have syphilis. Churchill, in Chicago, found over 30 per cent. These statistics led me to order a routine Wassermann test done on every child in my clinic who showed a tendency to chronic bone involvement, particularly of the mastoid variety. Since my connection with the Boston City Hospital, there have been many such cases and I am sanguine as to the results which may be obtained in this direction. In children, the Wassermann reaction is not at all to be depended on, particularly when bony tissue is involved. All the older symptoms in the skin, bones, teeth, eyes, etc., must be carefully sought for in case the Wassermann test is doubtful or negative. Nasal symptoms are not uncommon in children. Three cases of suspected foreign bodies in the nose have come to my attention, all of which proved to be specific disease and not foreign bodies. In all three cases there was a fetid odor and increased secretion, but there was little or no swelling of the soft parts of the nose. This is the opposite condition to what is found in the case of a foreign body, and is a strong point in the differential diagnosis. On the whole, children react well to treatment in this disease.

The value of the Wassermann reaction depends on the period of the disease at which it is taken. It has no value in the primary stage. As soon as the disease manifests itself in the general system, it develops its full strength. The effect of previous treatment with mercury is to give a negative Wassermann reaction; hence, a negative test is not positive evidence that syphilis is not present. The effects of previous treatment, moreover, may extend over a period of years and give a negative test in the tertiary period. The situation is still further complicated because in the latter stage of the disease lesions in bony tissue have a strong tendency to yield a negative Wassermann test even in untreated cases. This is an important point in tertiary lesions of the nose inasmuch as such lesions usually occur in the bony tissue. The Noguchi test is practically the same as the Wassermann. A large number of the two tests were carried on together by Dr. Sanborn in the Boston City Hospital, and the results were equal in every way. On the other hand, the luetin test is occasionally positive when the Wassermann test is negative. In such an event, the result of the luetin test may be given the preference.

In the event of a doubtful Wassermann reaction, another method of diagnosis is available which is a positive sign when present. The bones may show certain characteristics which are distinctly syphilitic.

The pathologic changes exhibit a variety of forms which, in exaggerated cases, may be determined by the sense of touch. There may be a distinct area of softening due to a broken-down gumma, or a thickening or roughness which may be determined by the fingers. The Roentgen ray will determine less-apparent lesions in the bones to the expert who is able to read them accurately.

Periosteal thickening may be circumscribed, single or multiple, and the thickened periosteum may be on one or both sides. Endosteal thickening, while less common than periosteal, is occasionally seen and when present is strongly diagnostic of syphilis. Dactylitis in children may be looked on as a very possible symp-

tom of the disease. Specific bone lesions are not limited to the long bones but may occur in any part of the osseous system. Specific infection in the ribs and rib cartilages is not infrequent.

In the cartilaginous rib transplant case previously mentioned, which Dr. Emerson and I performed together, the cartilage obtained from the sixth rib showed marked signs of having been diseased. We supposed at the time that it was sufficiently healthy for the purpose because of the negative Wassermann reaction. As a matter of fact, it did finally graft into place, but it required over three months to do so. I doubt, however, if the long inflammatory period was due to the cartilage, but to the extreme irritability of the tissues surrounding the cartilage when placed in its altered position.

Syphilitic bone lesions are particularly valuable guides in diagnosis for the reason that such infections are prone to give negative Wassermann tests. Expert syphilographers assert that perhaps not more than one case in three of bone syphilis exhibits a positive Wassermann. This phase of the situation is especially important to rhinologists, because a false diagnosis is easily possible if a Wassermann test alone be depended on.

A number of cases in the hospital which have given negative Wassermann tests have yielded quickly to salvarsan. One case of multiple sinusitis was negative to a provocation test, but immediately showed great improvement after the test was made, owing undoubtedly to the small dose of salvarsan given in the test. In fact, this particular patient was practically cured by a procedure which was instituted wholly for the purpose of diagnosis. From a diagnostic standpoint, it failed utterly to demonstrate a syphilitic process; but, for the time being, at least, it cured the patient's headaches and dried up a pus discharge which had been continuously present for many months. Another patient who had had several frontal-sinus operations (one of them a complete Killian) failed to respond to treatment for many months. The case occurred a year or more before salvarsan was known. Later it was one of the first cases of its kind treated with salvarsan in our hospital, and the results were most satisfactory.

The provocative test consists of giving a small dose of salvarsan and then making a Wassermann test. The theory is that the salvarsan breaks down the walled-off process and allows the spirochetes to enter the circulation. Bone lesions, in particular, respond to this test and it is an extremely important factor in nose and throat diseases for this reason. In my opinion, all chronic sinus cases should be given this test in the event of a negative Wassermann before any extensive operation is attempted. I know of two cases, which later proved to be specific, in which extensive and mutilating operations were performed on the nose and face. They occurred before the day of this test; but had it been available, both operations might have been unnecessary. In another recent case in which there are decided nasal symptoms, there was a negative Wassermann, but the history of the patient gave the father's death as due to locomotor ataxia. This due to a possible specific taint was deemed sufficient to demand a provocative test. At the time of writing the result is unknown.

Acute postoperative reactions of a syphilitic nature are not as common as we might suppose. They do occur with sufficient frequency, however, to make them

an important element in our work. I have actually seen but few such inflammations following septal operations. I have had two such reactions in private practice following sinus operations and two following cartilaginous transplants. In the latter, one patient previously mentioned had two negative Wassermanns before the operation. The other patient gave the cause of her nasal deformity as traumatic in its origin and we took her word for it. A violent reaction took place and persisted for many weeks. At first, we viewed the situation as an ordinary infection and treated it as such without relief. Finally, in desperation, we tried a Wassermann reaction and found it three plus positive. The case reacted well to salvarsan, but in spite of that treatment repeatedly given, combined with mercury, the Wassermann reaction is still positive though the wound has long since healed.

In the hospital clinic, a considerable number of sinus cases refused to clear up well after operation. The patients continued to have pus, granulation tissue and headaches in spite of continued operative treatment. Later, salvarsan was given with satisfactory results.

My attention was recently called by Dr. Sanborn to tonsil operations in syphilitic patients. It appears that a considerable number of such patients have been operated on with decidedly harmful results. Dr. Abner Post, who is known the world over as an authority in all matters pertaining to syphilis, informed me in a recent conversation that many children with hereditary syphilis are operated on for adenoids and the results of such operations are very injurious. Dr. Post further called attention to the fact that children with hereditary syphilis usually present the picture of adenoids and are thus liable to have such operations performed on them even if no adenoid tissue is present. I know of no special case of either adenoid or tonsil operation on a syphilitic subject. Doubtless such cases have occurred but I failed to recognize them.

Occasionally, for no apparent reason, an inflammatory process will follow operations on the nose or throat. We have previously supposed that such an acute reaction was due to an ordinary infection. Doubtless, some of them were syphilitic patients and that disease was the primary cause of the postoperative inflammation. Here arises another phase in the situation which is new to me.

It appears that postoperative inflammation, either acute or semiacute, is not alone due to syphilitic infection but to a double infection. In very destructive lesions, it is not the spirochetes alone which destroy the tissues, but other pus organisms which are also present acting in conjunction with them. For example, in the event of an ulceration of the larynx or the cartilaginous septum, the spirochetes attack the structures to the extent of greatly reducing their vitality. Into this fertile field come other germs of a virulent nature, and an exceedingly destructive inflammation results. This theory is proved by the evidence of systemic infection which is often present. If the case were one of the spirochetes alone being active, temperature and symptoms of septic absorption would not be present. Doubtless, when the inflammation is chronic and not especially active, either the spirochetes are acting alone, or with other bacteria of a low-grade variety. In chronic sinus cases, probably, both spirochetes and low-grade pus organisms work together, as the semiacute inflammation is too great for the spirochetes alone and too slow a process for organisms of the streptococcus variety.

Whenever a postoperative inflammation develops in our field, it is well to have a Wassermann test made immediately. If the seat of inflammation is in the soft palate, larynx or septum, the destruction is so rapid that permanent injury will result very quickly. Twenty-four hours' delay in accurate diagnosis may result in great deformity or loss of function before the proper treatment is given. I know of one case in which both sides of the mucous membrane sloughed away in twenty-four hours from a postoperative syphilitic inflammation following a septum operation. This was a case of latent syphilis presenting no evidence of the disease prior to the operation, but a very active process set in immediately afterward. Salvarsan speedily overcame the inflammatory reaction, but was given too late to prevent a large perforation.

The profession still has much to learn about syphilis. Many marvelous cures have been made, so far as symptoms are concerned, but who can tell of one patient who is cured for all time? Cases are known which after having been treated with salvarsan gave negative Wassermann reactions and the patients were supposedly cured, yet later developed most serious nerve lesions. At present, the question of cure is unknown. Expert syphilographers feel hopeful regarding patients in whom proper treatment has been given in the primary or early secondary stages. A number of such individuals have had reinoculations of the disease, which naturally is the best possible indication of a permanent cure. It is doubtful, however, if reinoculation ever occurred in the tertiary stage of the disease.

Salvarsan alone is not to be relied on. Mercury must be used in conjunction with it over a long period of time. A negative Wassermann reaction, after treatment, by no means indicates that a cure has been effected. Every syphilitic patient must be under observation for a longer period of time than salvarsan has existed as a specific remedy before any definite opinion may be given as to the final outcome of the case. The proper diagnosis and treatment of syphilis is a specialty by itself. The average physician, surgeon or specialist has too little experience with the disease to care for patients who are so afflicted, and it is far too important a matter for half-way measures in the hands of physicians of limited experience with this particular disease. The rhinologist and laryngologist should learn as much as possible of the syphilitic lesions which develop in his daily work; but very few specialists in this field are good syphilographers; consequently they should, if possible, refer such patients to other physicians whose experience has fitted them to be well versed in this very important branch of medicine.

In closing, I wish to express my sincere thanks to Drs. Post, Sanborn, Whitney, Nichols, Howard, Cotton and Herman, all Boston physicians and surgeons of wide reputation in their special fields of work, for the information given me pertaining to this subject.

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ABSTRACT OF DISCUSSION

DR. JOSEPH C. BECK, Chicago: The most important point, perhaps, is that there should be a routine Wassermann test on every patient we are going to operate on and I am thankful Dr. Borden brought up this question. It is not difficult to have a routine Wassermann reaction at this time and by it we may be spared a good many of the complications that

Dr. Borden has mentioned. With regard to tertiary syphilis and gumma, being so early as mentioned by Dr. Borden, I think that is not to be expected, as these changes take considerable time; for instance, endarteritis. The aid of the Roentgen ray, as Hickey of Detroit brought out in connection with disease of the tibia, is important. Even in the presence of a negative Wassermann, thickening is frequently found on the anterior portion of the tibia. The provocative test has been a disappointment to me in a large measure, though in some cases it may be a help. Last year, in our discussion, the point was made that we should be criticized for a perforation in the septum after a submucous operation, and I know of an instance in which a statement of that kind resulted in considerable trouble to a physician when the result may have been due to syphilis and not to any fault of surgery. With regard to transplants, I have had the same thing happen that Dr. Borden mentions; not with cartilage, but with bone; I never use cartilage because it becomes absorbed; but using the rib I had a condition of that kind.

DR. W. W. CARTER, New York: I wish strongly to endorse the point made by Dr. Borden with reference to the operations on bone in syphilitic subjects. I have had much experience in the transplantation of bone in the correction of nasal deformities and I have always endeavored to be absolutely certain that no active syphilis was left in the patient who was to be operated on. I have had in nearly all my cases two Wassermann tests made; but on three occasions, even after two Wassermann tests had proved, as much as a Wassermann can prove, that syphilis was absent, I had failure in transplantation of the rib for nasal deformity. The failure was not due to extraneous infection but to the effect of the syphilis on the tissues in which the transplant was made. The effect is very distinctive of syphilis at the location where the bone was placed. It did not show a purulent infection, but the tissues were very much thickened, discolored in a peculiar way, a sort of bluish red, and at first a serous bloody discharge came from the area where the transplant was placed. Subsequently this became infected and the transplant had to be removed. In each of these cases there was evidence in the rib, when I cut down on it, that the patient had been thoroughly saturated with syphilis. The rib was almost entirely cancellous tissue, and you will find in the old syphilitic cases that the bone has this appearance; the amount of compact tissue in the rib is very much diminished. I split the rib and scraped out the cancellous tissue and in this case the compact bone left was almost as thin as tissue paper. We should not do any bone operation in a case in which we are not absolutely certain that there is no syphilitic infection.

DR. JOHN O. ROE, Rochester, N. Y.: I agree with Dr. Borden in every particular, excepting the necessity of making a Wassermann test before all nasal operations are undertaken, which he so strongly advises. Such a test should certainly be made in all cases of suspected lues, or in all sinus operations, in which the cause of the trouble might be in doubt, but to lay down the hard and fast rule that it should be made in all cases before all simple operations, when there is no history or suspicion of a specific complication or association, would be not only unnecessary, but also might often give a critical or designing patient an opportunity to make trouble for the surgeon, in case something happened to interfere with the success of the operation. By way of illustration, if a perforation followed a submucous operation, when the cause of the deviation was unquestionably traumatic, or if unexpected complications should arise, the omission to make the test in compliance with a fixed rule, would again give the patient an opportunity to make trouble for the surgeon. There is, however, one class of cases in which a Wassermann is of great assistance and usually a necessity for the surgeon to determine the presence or absence of any active manifestation of a specific nature. This is in those cases of nasal deformity, attended with more or less destruction of tissue, the result of specific causes. Before undertaking any plastic operation in these cases for the correction of the deformities, it is important to determine the presence or absence of any activity of the constitutional disease.

DR. JOHN F. BARNHILL, Indianapolis: I wish especially to commend that portion of Dr. Borden's paper which tells us that we should be cautious to learn all there is to know about our patients before we operate. I have seen two patients in the last ten years who have been seriously injured by operative procedures having been carried out while a syphilitic condition was present. One young lady completely lost her nose as a result of such an operation. I saw recently a child 13 years old on whom some tonsil work had been done. The child had lost pretty nearly all of the soft palate and a portion of the hard palate as the result of the operation, which was unwarranted because of the condition of the child. As a rule laryngologists are not so cautious in the preparation and examination of their patients as the general surgeon is. It is pretty certain that a patient can drop in to almost any laryngologist's office and get a septum operated on or the tonsils removed, or almost any other thing done in the nose and throat on the same day he comes, provided the laryngologist has the time to do it. Dr. Borden's paper, I think, warns us very decidedly against this procedure. We have perhaps seen where we might have been benefited had we followed the advice he has now given us. He goes rather far, perhaps, in stating that latent syphilis is always, if I understand him right, a contra-indication to any sort of operative work in the nose and throat. If such were the case I am sure that all of us would have had many more calamities than we have had, because all must have frequently operated on these patients without any knowledge of the presence of a latent syphilis. I recently saw a case of well-marked tertiary syphilis in which several physicians of repute had repeatedly examined the throat without discovering the presence of a latent lues of the soft palate. This patient had apparently been well for a long time. I think this must be quite a common experience.

DR. OTTO T. FREER, Chicago: I agree with Dr. Roe that to ask for a Wassermann test before every nose operation would be an excessive and unreasonable demand. We should, however, as heretofore, always be on the watch for syphilis. I wish to call attention to the deceptive nature of the frequent mild and very slowly destructive forms of tertiary syphilis found in the nasal cavity and which contradict the common belief that tertiary syphilis in the nose is always a rapidly destructive disease. A common type of mild tertiary nasal disease is smooth infiltration of one side of the septum which exaggerates existing ridges or slight deflections into the appearance of a pronounced septal deviation with occlusion of the affected naris. The mucosa over the swelling is smooth, pink and deceptively normal in appearance. Minute inspection after adrenalin shrinkage, however, almost invariably discloses a small shallow ulcer or granulating patch, while the absence of a concavity of septal deviation in the other naris excludes a true deflection of the septum from the diagnosis. Two such patients have been sent to me for a submucous resection. Another form of mild hypertrophic tertiary syphilis is syphilitic hyperplasia of the inferior turbinate. It may so strikingly resemble the ordinary finely nodular true hypertrophy that it may be mistaken for a catarrhal product. Here, too, the presence of slight ulceration somewhere is usual and gives the clue to the nature of the affection. A third type of non-destructive tertiary syphilis is indolent ulceration of the vault of the nasopharynx. There is no clean-cut destructive ulcer such as text-books describe as typical, but instead a granulating, ill-defined superficial one resembling degenerating adenoid remnants in the adult. I have seen grave cerebral syphilis with paralysis of the abducens and facial nerves of one side, headaches and symptoms of the syphilitic pachymeningitis follow a syphilitic infiltration of the pharyngeal vault of this kind, and think that the diseased area was continuous with gummatous products above it in the middle cranial fossa, communication taking place through the foramina at the base of the skull. The three conditions I have described are not rare and should be watched for.

DR. E. J. BERNSTEIN, Kalamazoo, Mich.: I think we should thank Dr. Borden for calling our attention to the fact that

we ought to make a Wassermann test very frequently, but it seems to me to be going too far to say that we should have a Wassermann in every one of our nasal operations, for, if that were true, and we go on record that such should be done, a lot of disastrous results may happen if it is not done, and it is practically impossible in every case. If it were absolutely true that we run such a great risk, what in the name of common sense would account for our good results that we have been having in our operations for the past ten or fifteen years? I recall a case in point in an actively syphilitic patient, a man with an ulcerated nose. I had a Wassermann test which was negative. He had occlusion of the nares, which I thought might be the cause of the ulcer, in view of the negative Wassermann. I did a submucous resection of the septum and got a perfect result. I have no doubt many could recall similar experiences.

DR. HENRY HORN, San Francisco: An interesting thing about this discussion has been the extremely pessimistic way in which every one has spoken of the Wassermann reaction as an aid. A series of experiments has been carried out by a neurologist in San Francisco, who has found, as have many others, that the Wassermann reaction is a help when positive, but, when negative, absolutely not to be depended on in a great proportion of cases. Very recently, a Wassermann reaction was taken on a certain patient in which the blood was divided into two parts and both specimens were sent to the same laboratory; one came back with a negative report and the other positive. A point I would make is that we are too apt to depend on the Wassermann reaction. I simply sound a note of warning in this respect. I would call attention to three manifestations of tertiary lues: first, a peculiar, dry, postnasal catarrh, which is a latent syphilitic manifestation; a dry, shiny catarrh which doesn't respond to treatment. In these cases if we employ salvarsan we get rapid results. Secondly, a hypertrophic postnasal catarrh, like a pharyngitis granulosa. Thirdly, a peculiar type of antrum trouble, a non-infectious type in which the antrum is filled with a clear, non-purulent mass, of a gelatinous consistency that is easily overlooked in the washings.

DR. HUDSON MAKUEN, Philadelphia: I report a case illustrating the importance and the unreliability of the Wassermann test. The patient, a beautiful child of 4 years, came to me with an aphasic condition. He developed speech normally at 2 years; could say such words as automobile, elevator, etc., but gradually lost speech entirely and at the age of 4 was aphasic. He had been examined previously by several physicians and one had diagnosed his case as of muscular dystrophy. Not only was there aphasia, but the condition simulated juvenile insanity; the child had no concentration; paid no attention to anything brought before him. His father and mother came to town and I found that the father was in the first stages of paresis; all his muscles were affected. He was referred to the neurologist and it was decided to use the Wassermann test. I was told that it had been used six months before with negative results, but at this time he showed a positive reaction and that gave us a clue to the child's condition. We then had a Wassermann test on the child, and also included the mother. She was a nervous woman with various vague complaints, and she gave a positive reaction also, while the child gave a negative one. Notwithstanding that fact, we all concluded we were dealing with a syphilitic child. I mention this case to show that the one in which we should have expected a positive reaction gave us a negative one, while the mother who had no very marked symptoms gave a positive reaction.

DR. P. SCHOONMAKER, New York: The Wassermann test would be of far greater value if its findings were more definite. While the double positive reaction shows a syphilitic infection, a negative does not assure us that the disease is not present. Only recently I had an adult with nasal obstruction due to a badly deflected septum requiring an operation for its correction. He was rather pale and anemic, the functions of the body were normal, history negative, and no symptoms of a systemic infection. I considered his condition due to the deflected septum causing poor aeration. A submucous resection was done, the result being excellent, there

being no perforations or lacerations. The coaptation of parts was perfect. The nares were packed with aseptic gauze holding the parts well together; packing was removed in forty-eight hours; parts looked healthy. The patient did well for four days, on the fifth day the septal wall looked bad, and a day or two later the entire septal wall in site of operative field sloughed, leaving a large perforation. At this time a swelling in the nasopharynx was discovered. I was at a loss to account for this condition. Suspecting that latent syphilis might be present I had a Wassermann test made, which was negative. Nevertheless I put him on a mixed treatment and asked for consultation. Two specialists in rhinology saw him with me, and notwithstanding the history and negative Wassermann concurred in the opinion that the condition was one of tertiary syphilis and advised appropriate treatment. Under full doses of mercuric iodid and potassium iodid saturated solution, in increasing doses, up to 35 grains three times a day, there was rapid improvement in his condition. Wound healed nicely, the general health was better and case soon cleared up. The patient gained in weight and strength and said he never felt better.

DR. NORVAL PIERCE, Chicago: I have operated on syphilitic noses and have had just as good results as in the non-syphilitic cases. I do not mean that we should operate in the presence of active syphilis. I had one patient, a young woman, unmarried, anemic, undoubtedly virtuous, who had recurrent hemorrhages from the nose. The epistaxis was due, as I thought, to a deflection of the septum; there was an erosion of the septum on one side. After the deviation was corrected everything went all right until about a week after the operation when she had a violent hemorrhage from the nose which came from some point well back and was very profuse. The nose was packed, the hemorrhage ceased and the patient recovered. A short time after that she came into the hands of Dr. Webster suffering from menorrhagia. He eventually performed a hysterectomy and found, on section of the uterus, a marked endarteritis. He informed me that there had been two Wassermann tests, both positive. I believe hemorrhage from the nose in children is suspicious. I have had recently two cases of ordinary epistaxis, in one of which, knowing the father to be a man of very liberal habits in his youth, I had a Wassermann done, and while he had no symptoms of syphilis, there was a marked positive reaction in the child. May not these be cases of syphilitic endarteritis very often? I think, however, it should not go forth from this section as our opinion that we should have a Wassermann test before every nasal operation.

DR. L. W. JESSAMAN, Framingham, Mass.: I reported a case in a colored woman with sinus trouble seen three years ago, in which no history of syphilis could be obtained. A few days later the patient developed a swelling at the inner canthus of the right eye and a diagnosis of ethmoiditis was made. She was operated on, the ethmoid cells cleared out and the patient did well until some time afterward when she returned with a swelling at the lower margin of the left orbit, and another on the right side of the nose below the lower margin of the orbit. A diagnosis was then made of gumma, and the condition was very quickly relieved with the administration of mercury and potassium iodid.

DR. DUNBAR ROY, Atlanta: In my clinic in the South I have a great many negroes, and syphilitic manifestations in the nose and throat in this class are very prevalent. The northern men hardly know what these manifestations are until they have seen these cases in the South. You can find the lesions from the nose down to the epiglottis, but I rarely ever see a gummatous condition in the larynx. I never find the epiglottis entirely ulcerated away. Another point I would call attention to is to have a Wassermann test made in the cases of vasomotor rhinitis that come to us. In three out of ten such cases of engorgement of the nose, I have found a late secondary manifestation of syphilis. I always have a Wassermann made in these cases and it is surprising how they will yield to antisiphilitic treatment. I believe in a large number of these cases there is a syphilitic basis.

DR. EMIL MAYER, New York City: A woman came to see me with the story that she had been under the care of some of our best physicians and that they had diagnosed a condition of gall-bladder trouble. She wanted me to give her the address of another man to consult, and said, incidentally, "I have a little sore in my nose. Would you look at it while I am here?" I made a nasal examination and said, "I think you will find the whole cause of your trouble due to this condition in the nose." I sent her for a Wassermann test and, as I suspected, it was positive.

DR. JOSEPH C. BECK, Chicago: I hope I did not give the impression that I think it is necessary to have a Wassermann test in every case of nose or throat operation; only in suspicious cases in which the findings are not definite of lues.

DR. C. R. C. BORDEN, Boston: Someone has taken the ground that I overestimate the importance of latent syphilis. Last week at the meeting of the Laryngological, Otological and Rhinological Society I was asked how I dared etherize a patient who had acute congestion of the kidneys. I would have much less fear of such a kidney complication than I would in operating on a patient with latent syphilis in a delicate organ of special sense. In answer to Dr. Bernstein, doubtless a great many nose and throat operations have been performed with splendid results with no trouble from active or latent syphilis. On the other hand, serious complications have been known to follow in a sufficient number of cases as a result of syphilis to make it worth while to use proper precautions in all serious cases. I hope I have not given the impression that I have much faith in the Wassermann reaction, for I have not. I went through a great deal of trouble to get the latest ideas of the leading Boston syphilographers on the subject under discussion in order that I might present the other methods of diagnosis which are available for syphilis. Taking the subject as a whole, I appreciate the fact that it is not possible to have a routine Wassermann in every case, but all the larger hospitals are rapidly coming to it. We must consider that syphilis is a wide-spread disease and one which is the real cause underlying many diseased conditions in every field of medicine. Of course, in private practice, it would be impossible to have a routine Wassermann in every case, but in operations which are very destructive or mutilating a Wassermann test should always be done first. In fact, in my own experience, the procedure of the Wassermann reaction has more than once made such operations unnecessary.

A NEW METHOD OF REFLEX ELICITATION

PRELIMINARY REPORT *

WALTER B. SWIFT, M.D.

BOSTON

After completing four or five researches on different phases of reflex action during which some two thousand observations were made, and after seeing several diagnoses made wrongly on what seemed to be misinterpreted or insufficient reflex data, I came to the conclusion that there was a crying need of a more efficient mode of reflex elicitation available for application in exceptional cases.

I tried first to improve present methods of elicitation. To that end I visited Jendrassik in Budapest and obtained personal instruction as to his method of applying the hand-grasp. I put this into practice in many cases at the Boston City Hospital and when I found his technic an improvement over our own I

* From the Neurological Department of Boston City Hospital, Service of Prof. John Jenks Thomas.

* Read before the Section on Nervous and Mental Diseases at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

published the results.¹ Innumerable attempts to improve old methods met with failure. Then I began to search for some entirely new avenue of approach. I felt the need of another method not only for its worth in clinical routine examination, but also to enhance the value of my researches in reference to reflex frequency,² and other reflex propositions not as yet published.

Therefore a series of reflexes were tried during and after the passage of the electric currents—galvanic and faradic. My sincere appreciation is due to Dr. John J. Thomas for opportunity to carry on this research at the Boston City Hospital. Minutely the problem was as follows:

THE PROBLEM

Galvanism and faradism, strong and weak currents, were passed in cases of normal, exaggerated, pathologic and absent reflexes. Although this research is still in process, sufficient positive data of value have been obtained to warrant the presentation at this time of several new facts in the form of a preliminary report.

A. I find that with weak faradic current, *normal reflexes* change as follows:

The Triceps: Unchanged in 3 cases. Made more pronounced in 3 cases.

Wrist: Unchanged in 2 cases. More pronounced 2 cases.

Radial: Unchanged 3 cases.

Biceps: Unchanged 1 case. More pronounced 2 cases.

Knee-Jerk: Unchanged in 4 cases. More pronounced in 2 cases.

Achilles: Unchanged 2 cases. More pronounced 2 cases.

Plantar: Unchanged 2 cases.

B. I find that with weak faradic current, *exaggerated reflexes* change as follows:

Triceps, Wrist, Radial, Biceps: Unchanged 1 case each.

Knee-Jerk: More pronounced exaggeration in 3 cases.

Achilles: Unchanged 1 case.

One case showed leg clonus on patella tap, when without electricity both knee-jerks were merely exaggerated.

C. With weak faradic current, not enough cases were tried to tabulate any pathologic reflexes.

D. I find that with mild faradic current, *absent reflexes* changed as follows:

In one case of multiple neuritis, knee-jerk pronounced absent by every other method of reinforcement clearly elicited with weak faradic current and just after the current had passed.

In one case of anterior poliomyelitis (?) right Achilles pronounced absent by Dr. Thomas with usual methods of reinforcement. Found later to be absent because tired out. Obtained, however, after being tired out during the passage of a mild faradic current. Came about every other trial. Also found occasionally present after the current had passed and was again cut off. (Dr. Daly's observation.)

In one case of paresthesia of hand, knee-jerk reported absent on both sides with all other methods of reinforcement but obtained in mild faradic current on both sides. In the same case the right Achilles pronounced absent but elicited with a mild faradic current, a mild galvanic current, and a strong galvanic current.

Had there been *but one positive case*, had electricity only once elicited a reflex not obtainable by any other method of elicitation, it would have been worth reporting. But here are several.

CONCLUSIONS FROM THESE FINDINGS

From some 46 tests of the reflexes during the passage of the electric current, including normal, exaggerated, pathologic and absent reflexes, the phenomena show the following data:

1. Normal reflexes are made more active in about half the cases examined.

2. Exaggerated reflexes are unchanged in the arm, made more pronounced in the leg with exception of the Achilles.

3. Not enough pathologic reflexes were tried to warrant any conclusion.

4. Absent reflexes are generally unaffected but are sometimes elicited with this method when all other methods have failed. Applicable to the knee-jerk and Achilles.

COMMENT

That the electric current enhances the normal knee-jerk has no clinical value; also that during the current exaggerated reflexes become more exaggerated is of no great value. Whatever changes may be found in pathologic reflexes, and I predict here an increase, may contribute little. The fact of indirect value that they contribute to the situation is the general effect of electricity on general reflex action—the action of enhancing them—a fact that makes the findings under absent reflexes of more weight than if the opposite had been true. For if no increase of reflex action had been found in normal and exaggerated reflexes, we would be inclined to doubt such findings under absent reflexes, but finding they are increased in action when normal, and when exaggerated, we are still more inclined to expect that same action when the reflexes are absent by usual methods.

This finding of enhancement of them among normal and exaggerated reflexes lends momentum to the findings while the current is passing through otherwise absent reflexes.

Among absent reflexes the current occasionally elicits a reflex otherwise unobtainable. This is surely of some clinical value as a new and improved method of reflex elicitation.

Granted, many absent reflexes are pathologically absent and then no current can elicit them—as for example I have found in tabes—but there exist *border-line cases*—even cases in which absent or present may turn a diagnosis or markedly change a prognosis—and it is in these latent reflexes (that occasionally are so important to find), that this new method plays a service to neurologic routine examination in succeeding in demonstrating their elicitation.

SUMMARY AND CLINICAL VALUE

Examination of over forty cases of reflexes during and some after (Daly) the passage of the electric current demonstrates that the general effect of electricity on the reflexes is that of a reinforcement—which finds its special clinical value by elicitation of some of the absent reflexes unobtainable by any other method. I therefore claim a new method of reflex reinforcement of sufficient value to be included among other routine and neurologic examination methods in the following order: pendulum leg, diversion of mental attention, constant movement during stimulus, the Jendrassik hand-grasp, and finally, when all others fail, the electrical reinforcement.

Medical History.—Old sciences are unraveled like old stockings, by beginning at the foot.—Swift.

1. Swift, Walter B.: Studies in Neurological Technique No. 1: The Points in Jendrassik's Method of Eliciting the Patella Reflex, *Alienist and Neurologist*, 1913, xxxiv, No. 3.
2. Swift, Walter B.: Reflex Frequency and Its Clinical Value, *Jour. Nerv. and Ment. Dis.*, 1913, xl, No. 9.

ABSTRACT OF DISCUSSION

DR. J. T. FISHER, Los Angeles: Dr. Swift is to be congratulated on discovering a method of eliciting a lost reflex. I would like to have him explain a little more in detail the technic of the procedure, and would ask, in addition, if we are to understand that when the knee-jerk is gone, lost forever, as we see in cases of well-advanced tabes, he can reproduce that reflex by the method which he uses, or whether he has reference merely to the lost reflex which sometimes does occur in functional cases due to overfatigue of the reflex arc by the ordinary method of taking a reflex.

DR. WILLIAM W. GRAVES, St. Louis: We need, of course, anything in clinical work which will aid in determining the functional activity of the nervous system, and among its activities, those pertaining to reflexes are of the first order. Until it is a uniform practice to guard against the pitfalls in the use of reflexes, we shall not be able to use all of the refinements in examinations. I did not understand whether it was during the attempt to elicit a given reflex—the knee-jerk, for instance—that the electric current was passed, and whether it was assumed that the stimulation served as a means of increasing the excitability of the reflex arcs, or whether the use of the current was merely a means of suddenly diverting the patient's attention. I would ask Dr. Swift to explain these points in closing.

DR. WALTER B. SWIFT, Boston: Dr. Fisher asked about the technic in eliciting the knee-jerk. I put one electrode under the leg of a sitting patient and the other one on the calf. In eliciting the Achilles tendon reflex I put one electrode on the calf and one on the sole of the foot. I find it does not make any difference which electrode is put above and which one below. Dr. Fisher also asked about the type of the reflex that I attempted to bring out. I agree with the suggestion made by Dr. Fisher that the absolute pathologically broken arc can not be revived in its function, and that the lost reflexes of tabes and other pathologic lesions when the arc, either of the motor side or of the sensory side, is entirely gone, cannot be brought out by this method. This will perhaps also answer Dr. Graves' question: It is applicable in border-line cases; that is, those in which other methods have failed to elicit a reflex, and in an arc that is intact. In cases in which our diagnosis turns more or less on the absence or presence of a reflex, and in which it is found impossible to elicit those reflexes by our usual methods of reinforcement, this is a final resort. I would not by any means propose that this should be a matter of usual routine in neurologic examinations. I think that is entirely out of the question; but I do think that it is of value in rare cases and in border-line cases when other methods of elicitation have failed, and that I have found in the clinic of the Boston City Hospital in these cases that I have reported. Dr. Graves asked about the effect of the electricity. The reflex is taken with the current on; that is, the current is started and the reflex is taken during the passage of the current. He also asked whether it was the effect of the current that elicited the reflex, or the diversion of the attention. From the fact that the reflex has also been obtained after the current has passed and after the electrodes have been removed I would be inclined to give the credit to the passage of the electricity, especially as these cases have failed to show reflexes when other methods of diversion of the attention have been employed.

The Duty of Research in the University.—Wonderful as were the isolated achievements of the great discoverers in medicine in the early centuries, the great continuous advance in medicine during the past eighty years resulted from organized laboratory effort based on the principle of exact experimental methods; and it is the duty of the university so to organize its laboratories and hospitals that this advance of medicine by research may continue, side by side with teaching, as a university function of benefit to students and faculty as well as to the state and the general public welfare, and thus as an aid to the advancement of civilization.—Richard M. Pearce.

FOUR CASES OF SUDDEN DEATH
IN A SILO

E. R. HAYHURST, M.D.

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AND

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In view of the constantly increasing importance of the silo for the preservation of fodder on the American farm, it seems proper to draw widespread attention to the danger of fatal asphyxia which may occur to workers in filling and emptying silos. There are no reported cases on record of fatalities under such circumstances so far as we have been able to learn after a careful search of the literature. Agricultural bulletins¹ warn of the danger of carbon dioxide asphyxia unless certain precautions are taken. A sudden death here and there has unquestionably been laid to heart failure, apoplexy and the like.

Since the first American silo was built by Dr. Manly Miles,² in 1875, the principle has undergone widespread development throughout the country so that the dangers herein cited are liable to beset a large number of persons. The danger from the accumulation of heavy gases in the old type of pit-silos dug in the ground can be easily appreciated, but the instances in question took place in a modern upground metal silo, built about 40 feet high, and free from surroundings which might interfere with ventilation.

At the Athens (Ohio) State Hospital, at about 7 o'clock on the morning of Sept. 19, 1914, four members of a squad of six men ascended the ladder on the outside of the silo in question to an open door about 12 feet from the top, and jumped in, one after the other, on the silage, the level of which was about 6 feet below the doorway. Within five minutes, as reported, the next two men who ascended shouted down that the first four looked as though they were dead. A large force of workers who were at hand immediately ascended the silo, and opening a lower door which was just above the level of the silage, hurriedly removed the unconscious forms, and, in spite of the immediate arrival of four or five physicians from the institution, all attempts at resuscitation failed.

The unfortunate ones, one of whom was 31 years old, and the others 56, 56 and 67, were "trusties" at the institution, and all had been engaged for several years on the institutional farm, and had helped in filling silos for the past two or three years. During the two weeks previous they had helped to fill two large wooden silos nearby, and during the three days previous had helped with the filling of the metal silo in question. Their work was to tramp down the ensilage as it was delivered from the blowpipe. On this morning the machine had not yet begun operations, and apparently the men sat down or lay down on the silage to wait.

To expedite the removal of the victims they had to be let down head first within the 3½-foot chute which

1. Babcock, S. M., and Russell, H. L.: *Causes Operative in the Production of Silage*, 17th Ann. Rep., Wisconsin Agric. Expt. Sta., 1900, p. 131. Crisp, H. L., and Patterson, H. J.: *Silos and Silage in Maryland*, Bull. 129, Maryland Agric. Expt. Sta., July, 1908, p. 10. Erf, Oscar: *The Silo for the Dairy*, Bull. Agric. Coll., Farmers' Reading Course, Vol. 2, No. 4, Ohio State Univ., p. 3.

2. Year Book, U. S. Dept. Agric., 1899, p. 616.

surrounds the ladder. In this manner they were passed down from helper to helper to the brickpaved dairy-yard below. All were cyanotic, and respiratory movements had ceased, but it was thought that in three the heart action was still present when resuscitation efforts began. In a few minutes, however, all became pallid, and in spite of an hour's efforts on each one with artificial respiration and stimulants, none revived.

On the evening of the same day we arrived at the institution and necropsies were performed on two of the bodies with significant anatomic findings (which were exactly similar in both cases) as follows: A black fluid condition of the blood which flowed persistently from practically all places of incision, there being an entire absence of clots; marked cyanosis of the lungs and mucous membranes of the tracheae and bronchi. The same was true of the livers and kidneys. There was also marked capillary injection of the brains and intestines. Aside from these findings the tissues of the bodies showed no recent changes worthy of comment; especially there were no pathologic conditions of the hearts or vessels to be noted.

The next morning about 7 o'clock we visited the silo in question, where conditions had been allowed to remain as on the previous morning, except that before orders could be issued a couple of feet more of silage had been added. This had apparently sunk 1 foot during the night, leaving about 5 feet up to the bottom of the door in question. However, according to the manner in which the gases are generated (see below), about 10 or 12 feet should have been added, more nearly to reproduce the amount of gas to which the workmen had undoubtedly been subjected. The weather on the two days was practically unchanged, being slightly cool at night and warm during the day. The silage consisted of fresh, rather finely cut, immature corn. Light within the silo was good, owing to open doorways above and in the roof. The temperature seemed about 10 F. higher than that of the atmosphere without. A more peaceful and inviting scene could not be imagined than the warm, pleasant smelling green silage within. With a few moments to spare, the most natural thing for workmen to do would be to sit down or lie down on the silage.

We dropped a guinea-pig within, which, in thirty seconds, toppled over unconscious after a brief exhibit of respiratory difficulty. A rabbit was next dropped down on the silage. It took a few steps, showed some dyspnea and dropped over on its side unconscious at the end of sixty seconds. Next a large, slender collie dog was lowered down and in just two and three quarter minutes it likewise fell over unconscious. The oncome of unconsciousness in all cases was very sudden. The animals, after unconsciousness, rapidly turned bluish about the nose, lips, tongue (and ears in the case of the rabbit). The guinea-pig was dead in ten minutes, the rabbit at the end of forty-two minutes, while the dog was removed at the end of thirty-three minutes, when abdominal and chest movements had ceased, although drawing back of the corners of the cheeks was still present. Within a few minutes on the outside, the dog, which had been let down by its tail, showed signs of reviving; at the end of six minutes it appeared partly conscious, and thereafter rapidly recovered without any efforts at resuscitation having been tried. Necropsies on the guinea-pig and

rabbit revealed conditions entirely similar to those described above in the cases of the human subjects.

Next a bunch of matches, lowered on a pitchfork tine, snuffed out at a level of about 18 inches above the silage. A lantern behaved similarly, and the level of the gas could be estimated within half an inch by means of the effect on the lantern flame. At this point a gallon bottle of water was lowered, inverted, and a sample of the gas thus collected.

Another half-mongrel dog of medium size was dropped in, but unlike the collie, which sniffed around over the surface of the silage, this dog kept its nose well elevated and showed very few symptoms. At this point one of the investigators jumped in and lowered his head to the top of the silage. A most startling, rather pungent, warm and slightly alcoholic smelling gas caused the investigator to retreat hastily to the open door above. The lower door (just above the silage) was then opened, through which the second investigator detected the same gaseous odor, which irritated the mucous membranes and the throat considerably, and the effects of which could be felt for fifteen or twenty minutes afterward. There was no odor suggestive of bitter almonds, garlic or rotten eggs (hydrocyanic acid, hydrogen arsenid, or hydrogen sulphid). A few more experiences convinced the investigators, however, that one could rapidly become used to the at first unpleasant effects of the gas, and that to workers customarily employed about silos it might not be considered of any moment.

Experiments with animals and lights were made in the two neighboring silos, which had been filled with a ripper and dryer corn fodder, but all resulted negatively.

The analyses of the gases collected, which were made by Prof. William L. Evans, of the Department of Chemistry, Ohio State University, showed as follows:

A. Sample from the silo in which the deaths occurred:

Gas	First Estimate Per Cent.	Second Estimate Per Cent.
Carbon dioxid.....	38.0	38.3
Oxygen	13.5	14.0
Nitrogen	48.5	47.7

No test could be obtained for carbon monoxid, ammonia, hydrocyanic acid or methane.

B. Sample from one of the neighboring silos (filled, however, the week before):

Gas	First Estimate Per Cent.	Second Estimate Per Cent.
Carbon dioxid.....	.20	0.24
Oxygen	20.5	20.7
Nitrogen	79.39	79.06

Likewise no test could be obtained for ammonia, hydrocyanic acid or methane. (Nitrogen was determined by differences in both cases.)

According to Rambousek,³ 10 per cent. of carbon dioxid in the air causes asphyxia, which is usually sudden.

Some peculiar features obtain in silos. The initial heating of silage is described⁴ as due to the direct respiration of plant cells, increased by the cutting of plant tissues, by intramolecular respiration of ensiled material (the chief factor), while (in a tight silo such as this was) the factor of bacterial and mold action is practically negligible.

3. Rambousek, J.: Industrial Poisoning, translated by T. M. Legge, 1913, p. 201.

4. Babcock, S. M., and Russell, H. L.: Causes Operative in the Production of Silage, p. 130.

The composition¹ of the air at time of filling is of course the same as the normal atmosphere, but immediately after the cut fodder is ensiled, absorption of oxygen by the plant tissues begins and continues until all of the free oxygen in the air spaces is consumed by the respiratory processes of the plant. This direct absorption of oxygen is nearly, but not quite, counterbalanced by the evolution of carbon dioxide, as a portion of the oxygen combines to form other by-products. An analysis of the air even within twenty-four hours often shows no free oxygen. The nitrogen of the air is unaffected by these plant processes.

Within a short time gas begins to be given off, and continues at an increasing rate for a day or so, then gradually diminishes. The gas so evolved is largely CO₂, but is mixed with the residual nitrogen of the contained air. This CO₂ is the result of intramolecular rather than direct respiratory processes, and as the oxygen required for this change is derived from the tissues of the plant, the volume of gas in the silo is increased by the amount of CO₂ formed. The evolved CO₂ is therefore a measure of the intramolecular respiration. The evolution of this gas marks an actual and unavoidable loss in the organic matter of silage. This source is operative so long as life exists in the plant cells, but when the cells die, gas from this source is no longer given off.

When the gases of a silo are measured, either by volume or by absorption of the CO₂, the production of gas is found to be very rapid for the first few days, and then to diminish quickly in a manner somewhat comparable to the evolution of heat previously referred to. It soon reaches (two weeks or so) a rate that continues with slight fluctuations for some months. Such a rate of gas evolution can only be intelligently interpreted by assuming that most, at least, of the CO₂ evolved is the result of processes inherent to the plant cell, and not to fermentative action set up by organisms which must have developed subsequent to the ensiling of the fodder.

In fact, it is the presence⁵ of this carbon dioxide gas which is the principal perserving agent in the silage. The escape of this gas from the silo will immediately start decay. Usually mold does not affect more than the mere surface of the silage and this acts as a seal to prevent the air from decaying the silage to a greater depth. The amount of carbon dioxide developed⁶ in a silo filled with immature corn may reach 75 per cent. of the total gases present, the chief remaining gas being the nitrogen of the air.

"The conditions favorable for a maximum evolution of carbon dioxide is an immature corn cut into fine pieces and placed in the silo at intervals" (as the daily filling with nightly interruptions).

Fatal asphyxia from carbon dioxide has been reported under the following somewhat similar conditions: among vintners, distillers, brewers, yeast makers, in the holds of grain vessels and in peat pits. But a very great danger exists also in every silo unless precautions are taken. These consist in keeping the doors immediately above the level of the silage open, or in having unhinged doors which fall in as the silage settles below them, while the absence of a roof (which is said not to be necessary) would permit prevailing winds to draw off gases by suction action. The gas were n be driven out easily by using an open umbrella, in m. h. of hay, or leafy branch of a tree to promote organization. When any doubt exists, the effects on a experiment flame should be noted. to organic case of accident, the Meltzer apparatus, recom- of medicated by the Committee on Resuscitation from Mine teaching, as

Oscar: The Silo for the Dairy, pp. 13 and 27.
faculty as well. F. H. Influence of Close Packing of Corn in the Silo,
and thus as Ann. Rept. Wisconsin Agric. Sta., 1901, p. 202.
Richard M. Pearce from letter under date of Sept. 30, 1914, from R. H.
Bureau of Animal Husbandry, Dairy Division, Wash-

Gases,⁸ would appear to be the best of the mechanical devices available.⁹

We desire to thank Dr. O. O. Fordyce, superintendent of the Athens State Hospital, his staff, and others for their kindly efforts in facilitating investigations. A complete report of this investigation including necropsy findings will be given in the *Monthly Bulletin* of the Ohio State Board of Health for October, 1914.

KALA-AZAR

A CASE REPORT FROM CHINA

ALFRED C. REED, M.D.

CHANGSHA, CHINA

The economic significance and pathologic and clinical course of kala-azar have been studied and described by many observers in Africa, India and the Mediterranean littoral. Its recognition in China, however, is of comparatively recent date, and data are yet insufficient to estimate its economic significance there. It is safe to assume that the disease will be found as serious a problem in China as in other countries where it is endemic. For the present it is most essential that complete and reliable data be secured on the question of prevalence and distribution of kala-azar in China. As the infective agent of the disease is known, and as it is transmitted by bedbugs, rats and perhaps other vermin, and finally as the endemic section of China corresponds in latitude and somewhat in climate to a considerable part of the United States, studies of kala-azar in China may prove to have a direct value in sanitary and quarantine administration of the United States in the future. It is not the purpose of this report to review the clinical or natural history of kala-azar, or to present descriptions which are easily accessible in standard texts. It is desired to report one case outside the endemic zone established for China by Cochran, and to call attention to a disease which in the future may be of practical as well as of academic interest to American physicians.

After as complete a survey as could be made, Cochran¹ mapped out as the endemic area for China the section bounded on the south by the Yangtze River, and including that part of the provinces of Kiangsu, Anhwei and Hupeh lying north of the river, the eastern half of Hupeh and Honan, the southern half of Chihli including Peking, and all of Shantung. Reference to a map will show the relation of this area in latitude to the United States. A considerable similarity also exists in the matter of climate. Outside of the area indicated, Cochran obtained but two positive reports, from Wuchang and Kiukiang, respectively, which are on the south bank of the Yangtze.

The present case is reported from Changsha, the capital of Hunan, 200 miles south and west from Hankow and Wuchang, on the Siang River, which is a tributary of the Yangtze.

The patient, an unmarried Chinese man of 28 years, was admitted to the medical service of the Red Cross Hospital, Feb. 26, 1914, where he remained until his death, April 20, 1914. He was a boatman by trade, a native of Yuen Kiang on the upper Yangtze River near Ichang. He came to Changsha before admission to the hospital. His admission to the hospital was for dysentery at the

8. Techni
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Sept. 26, 191
1. Cochran

Mines, August, 1914.
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ii. Part 3, p. 179.

age of 42. His mother survived him. Of four brothers all were living and well. Two years before, one of his fellow boatmen developed a disease similar to his own and later a second boatman died with symptoms such as the patient presented on admission.

Except for measles in childhood, the patient was always in excellent health previous to the onset of the condition for which he sought hospital relief. This illness began five years before with severe abdominal pain, diarrhea and blood-streaked stools. The condition had persisted with periods of exacerbation and amelioration. His complaints on admission were anasarca, most marked in the peritoneum, shortness of breath and general debility. Physical examination showed a young man of medium height, very emaciated, markedly icteric, with a dry, elastic, hot skin. There were extreme abdominal distention and umbilical protrusion. The icterus was notably greenish and of universal distribution. The pulse was 100, soft, weak and regular. The fingers were somewhat clubbed and cyanosed, and the capillary circulation was poor. The conjunctivae were greenish-yellow.

The mouth and throat were normal. The deep cervical, axillary, inguinal and epitrochlear glands were easily palpable and of moderate hardness. The neck was severely emaciated and a venous pulse was observed in both external jugulars. In the lungs the left apex was dull, with high-pitched respiration, prolonged expiration, increased vocal fremitus, and crepitant râles. The right apex showed slight dullness, high-pitched respiration, prolonged expiration and crepitant râles after coughing. Elsewhere in the lungs the respiration inclined to the bronchial type. Breath-sounds were lost anteriorly and posteriorly at the level of the sixth rib. Below this point posteriorly there was flatness with deep tympany on heavy percussion.

The apex-beat was visible in the third left interspace, $3\frac{1}{2}$ inches from the median line. In character it was heaving and diffuse. Palpation corroborated the location. A blowing, rather harsh systolic murmur was heard at the apex and transmitted to the axilla. A very harsh systolic murmur was heard also at the aortic and pulmonary areas. The valvular and muscular quality was fairly good.

The abdomen was enormously distended, tympanitic between the lineae semilunares, and flat outside these lines. The spleen was enlarged a hand's breadth below the costal margin. The liver was not enlarged. The lower extremities, especially the feet, were very edematous. Reflexes were normal.

The sexual organs showed a peculiar hermaphroditic arrangement, which is worthy of report, although it had no bearing on the disease in question. The penis was infantile, more resembling a hypertrophied clitoris. The urethra was patent to the extremity of the penis, but there was present also a hypospadias with a comparatively small aperture at the bulbous portion of the urethra. Urination took place both through the hypospadiac aperture and through the penile urethra, sometimes concurrently, sometimes interchangeably. A rudimentary vaginal pouch was present, with well-marked labia majora, rudimentary labia minora and with its floor slightly deeper than the normal location of the hymen. The testicles were small, soft, and retracted into the inguinal canals, from which they could be drawn down into the labia majora. The inability at the time the patient died to secure a necropsy prevented examination of the internal structure and histologic examination of the testicles. The pubic hair was not abundant and covered a triangular area. No hair was on the face or in the axillae. The mammae were typically masculine. The expression, voice and general demeanor were feminine.

Death occurred in toxemic coma after an illness of five years and after two months in the hospital. The icterus steadily increased and during the last month the splenic tumor enlarged and became markedly tender. At no time was hepatic enlargement observed. The ascites, icterus and lack of hepatic hypertrophy indicated rather a considerable degree of cirrhotic contraction. The temperature remained fairly normal with an occasional rise to 38 degrees. The pulse ranged between 70 and 90, and the respiration from 20 to 25.

Clinical laboratory reports were as follows: Examination of feces on admission showed a whitish semisolid specimen, with no mucus or blood. *Ankylostoma* ova were present. Subsequent examinations were the same with the addition at times of a small amount of blood. Except for an occasional trace of albumin, the urine was normal. Blood examination, March 10, six weeks before death, showed 3,800,000 red cells, 70 per cent. hemoglobin, (color index 0.94), white blood-cells 3,200. The ratio of white to red cells was 1:1,187. Smears stained by the Leishman modification of the Romanowski method, out of 200 cells counted, gave a differential white cell-count of polymorphonuclears 60 per cent., large lymphocytes 15 per cent., small lymphocytes 10 per cent., eosinophils 1 per cent., mononuclear and transitional forms 14 per cent. The stained red blood-cells were somewhat pale, and included many poikilocytes, macrocytes and microcytes. The *Leishmania donovani* was found, two in one leukocyte. A blood examination one month before death showed a further reduction of red cells to 2,300,000, hemoglobin 70 per cent., white cells 3,000. The differential count was unchanged. The red cells, however, showed a progressive anemia, having more macrocytes and microcytes, numerous poikilocytes and many normoblasts, as well as irregular staining and granular degeneration.

According to the method recommended by Cochran, superficial lymph-nodes were twice excised from the inguinal regions under local anesthesia, and smears from them examined for *Leishmania*. In both cases numerous suspicious and atypical bodies were found in the lymph-cells, but no clear-cut, positive picture was obtained. This is perhaps to be explained by the advanced stage which the disease had attained.

Treatment was symptomatic throughout, except that the *Ankylostoma* was eliminated with thymol. The peritoneum was tapped three times and 10,300, 10,000 and 10,500 c.c. of ascitic fluid, respectively, were withdrawn. Death occurred after thirty-six hours of delirium and coma, with extreme jaundice and myocardial failure.

The diagnosis of kala-azar in this case is based on the finding of two of the *Leishmania donovani* in a leukocyte of the peripheral blood, and is supported by the occurrence of numerous atypical bodies in lymphatic gland-cells obtained a few weeks before death, by the clinical history and appearance of the patient, by the blood-picture and by the elimination of other possible causative agents for the disease. The duration of the disease, the patient's age, and his knowledge of other similar cases are in correspondence to the diagnosis. It is to be noted that this case originated near Ichang on the Upper Yangtze River, and reached its development at Changsha, both points well out of the area which has to date been considered endemic for China. The pulmonary lesions represented an intercurrent affection due essentially to the patient's chronic illness with its depleting and exsanguinating course.

As already mentioned, kala-azar is found to flourish in China in an area corresponding in latitude and to a great degree in climate with a considerable portion of the United States. As the disease is carried by bed-bugs and perhaps other vermin, its introduction into the United States might at any time prove serious, and its spread might be rapid. Suspicious cases are easily recognized clinically by the splenic tumor and blood-picture, and all such cases should be examined for the presence of the *Leishmania* on which valid diagnosis rests.

The Changsha Yale Hospital.

Caution.—For truth itself has not the privilege to be spoken at all times and in all sorts.—Montaigne.

THE HISTORY OF THE FIRST MILK DEPOT OR GOUTTES DE LAIT WITH CONSULTATIONS IN AMERICA*

HENRY KOPLIK, M.D.

NEW YORK

When I returned from my studies abroad in 1887 I was appointed attending physician to the Good Samaritan Dispensary, New York City. I had control of the service in diseases of children, and at this time there was an undercurrent of feeling that the treatment of children in dispensaries needed the introduction of new ideas as compared to what was then in vogue. In all dispensaries or outdoor clinics in children, then as now, the mass of cases have among them as a large quotient the disorders of the gastro-intestinal tract. It was customary then, as often now, to treat these cases in a most routine manner. The infant was prescribed some mixture, and the mother sent away with some instructions and allowed to find the best way she could of carrying out the directions given her. She might remember some and forget others which were of vital importance. It mattered very little. I felt that this was entirely unsatisfactory. As we believed, then as now, that the food of an infant was of first moment in its recovery, I determined to place the food at the disposal of the infant, leaving the administration of drugs to take a secondary place. With this idea in view there arose in 1889, the first milk depot or *gouttes de lait* in my dispensary. At first I put the milk up in separate bottles and sterilized it. The apparatus was exceedingly simple. After sterilization the milk was placed in the keeping of the apothecary of the dispensary, then the Eastern Dispensary, and was given to the patients only on prescription. The sick infant was first seen by me, and then the mother received her directions and milk, and was told how to use it—to give it whole or to dilute it with barley gruel in definite proportions. After having given this to the mother she was directed to bring the infant at regular intervals; it was weighed, watched and treated. This simple innovation seemed to create quite a stir among the mothers, and met with ridicule and opposition from the unthinking. The results, however, began to attract attention. The sterilized milk in separate bottles, each bottle to be given at certain intervals to the child, was looked on by my mother-patients as something short of marvelous. The mothers and babies flocked to my dispensary. In addition physicians came to watch the effect and the manner of this innovation in the treatment of gastro-intestinal disorders of infancy. So successful was this departure that in May, 1890, I was persuaded to show my methods and apparatus, and describe my milk depot, then a year in existence, before the New York County Medical Society. I remember well the rather distant and patronizing attitude of my audience. A well-known pediatricist at this meeting remarked that the milk depot could never become popular on account of the labor of washing the bottles, and therefore it must perforce be very limited in its application. I persevered, however, and Nov. 12, 1890, I made a communication¹ to the New York Academy of Medicine, Pediatric Section, of my work in establishing my idea of milk depots or dis-

pensaries for the feeding and treatment of infant intestinal disorders. In this paper I pointed out that medical supervision must go hand in hand with the administration of milk and food. The milk which I utilized was the best I could obtain at the time, and being without means to supply milk from my own farm, and certified milk being unavailable, I went into the open market and bought the best bottled milk, sterilized it in separate portions, and thus did the very best I could for my patients. This work was not without results. I felt that the patients who came to be treated were so troubled and often so ignorant that the milk must be placed in their hands ready for the infant, and all they would have to do was to give it at proper intervals. Thus the first milk depot, *gouttes de lait*, in connection with medical advice (consultations) became an established fact in America. When the old Eastern Dispensary moved into new quarters and assumed the name of the Good Samaritan Dispensary, a lay committee furnished funds to enable me to extend the field of usefulness of this new idea of milk depots. I then devised new apparatus, and in a short time, with a large staff of helpers, we were enabled to extend our work materially, and feed large numbers, sometimes two hundred infants daily, with milk put up in formulas in separate nursing-portions. This was in 1891. The facilities of thus treating infants with intestinal disturbances was not limited to dispensary patients, but physicians were invited to send to the milk depot and have certain formulas prepared for their patients. During all this time the campaign to further this method of caring for sick and well infants received most decided opposition, as every new departure will, and also great encouragement. Infants in my service were weighed, watched, and fed; those from other physicians were not controlled. Thus the first milk depot, *gouttes de lait*, with medical control became the topic of interest in all quarters, and even the daily press found something of interest in this new departure.

At first the milk, as I have indicated, was given whole, sterilized, to the patients, and the patients directed to dilute it according to directions. It was soon found that this was not enough. The patients must have the finished formulas put into their hands ready to give to the infant. They could not be trusted to dilute it correctly. The milk became contaminated or spoiled in the handling of it. It was then decided to give each infant a definite formula and quantity according to its age, and thus each child was studied as to the best method of feeding. In a milk depot only a few formulas could be put up which would apply to the largest number of infants as an average application. Thus for the infant from birth to the third month the Meiggs formula was prepared. As is well known, the Meiggs formula contains 1 per cent. protein, 3 per cent. fat, and 6 per cent. milk sugar approximately. For infants older, from the third to the eighth month, the so-called Heubner-Soxhlet mixture was advised, and in addition whole milk in the sterilized or pasteurized state was furnished to mothers. All the apparatus, including that for sterilizing or pasteurizing the milk, the device for cleansing the bottles, and those for refilling, were of my own models. The great principle followed was not merely that our milk depot be regarded as a place where milk was sold, but where a carefully conducted daily clinic took care of the sick or even well infants, treated them individually, and gave each infant the

* Read before the Association of Milk Commissions, Rochester, N. Y., June 19, 1914.

1. Koplik, Henry: The Administration of Sterilized Milk in Dispensaries, New York Med. Jour. Jan. 31, 1891.

food fitted for it. Infants were all systematically weighed once or more a week, and the Good Samaritan depot became the Mecca of mothers with sick babies, and of physicians who were interested in the advanced treatment of gastro-intestinal disorders and the feeding of sick and well infants and children. In the New York Medical Journal of Feb. 4, 1893, I described² the first two years' work of the milk depot under the enlarged and perfected plan. I there stated the origin of my milk depot idea in 1889 and its development. I had found as a matter of interest that the old form of sterilization at 100 C. was not as desirable as would be a lower degree of sterilization, and it was shown that in a public milk depot heating of the milk at from 65 to 68 or 70 C. was too low, as careless handling by the mothers soon allowed the milk to sour in twenty-four hours, whereas 85 to 90 C. was sufficiently high to trust them with the milk in the heated term, and the milk would keep quite well in a moderately cool place for twenty-four hours. In the previously mentioned article I also published the work of 1891 and 1892 with the improved facilities and new buildings of the former Eastern Dispensary, now the Good Samaritan. At that time "certified" milk was not generally obtainable so I obtained the best milk in the open market in cans or bottles, a much better milk than was accessible to my patients. The work done in this milk depot during the years 1891 and 1892 was as follows:

Separate nursing-portions.....	101,482
Infants and children supplied.....	1,274

Inasmuch as these children all passed under my direct daily supervision and treatment it can be surmised that the work done was little short of herculean. In this article I calculated that the number of children who received the control of food and advice, for any length of time, was 539, for the two years. The following figures show the work done in the first year of the existence of the milk depot of the Good Samaritan Dispensary. It is still in existence, feeding, on an average, 130 children daily.

RECORD OF FIRST TEN YEARS' WORK OF MILK DEPOT OF
GOOD SAMARITAN DISPENSARY*

Year	Bottles Supplied	Children Supplied
1889	7,000	137
1891	44,111	574
1892	57,371	700
1893	70,068	976
1894	70,705	720
1895	75,550	932
1896	96,313	766
1897	155,989	1,064
1898	298,674	1,204
	875,781	7,073

* Records for 1890 lost.

In the first work on milk and its relation to public health, from the United States Hygienic Laboratories, this work escaped notice, but in a subsequent revision by Dr. J. W. Kerr of Washington, I had the satisfaction to see the work of this pioneer character mentioned.

I can say thus that the original idea of putting into operation the milk depot in direct connection with dispensary treatment originated in the United States, in the Eastern Dispensary, in the children's service of which I was chief, and was perfected in the present form in which it still exists in the Good Samaritan

Dispensary, as I have shown. I remember well my insistence to students who visited my clinic and milk depot and laboratory that all feeding of babies from milk depots should be under direct medical control. I had occasion also to show later the harm done by giving patients, or selling them, milk without physicians' prescriptions. When some four years after the depot was started by me in my service, other milk depots arose in the effort to supply the poor with good milk, I found that some of my patients after exhausting the supply obtained in my clinic, would go elsewhere, and buy, without control, additional feedings. Such children would, of course, become very ill from excess of food. This could not happen were the depots under strict medical control. The good intended was in many cases thus overshadowed by the harm done. In any clinic for the treatment of infants and the feeding of the well and sick infants, there will always be a floating quantum of patients who drop out, but a certain percentage, as indicated, remain, especially if mothers see that the medical care is sincere, that the infant is watched and weighed. At this time when complicated mixtures were prescribed I would, if I thought the mother was earnest, send a nurse to the house, especially if the mother could not spare time from her work, to teach her the making of the food and the details of care of the infant. I feel now, as I felt and agitated at this time, that the milk depot alone is of very limited utility if not combined with actual, not nominal, medical treatment of the infant. To-day we have also this idea of quite general adoption in foreign countries and America. The milk depot with actual medical supervision of infants has come to be generally adopted, and will in time attain greater perfection of method, and will reach more infants as mothers become more educated in the care of their infants. The ideal method is that which I have first adopted and practiced. The physician first sees the infant, if the baby is well, and at the breast, the breast-nursing and addition of bottle-feeding is advised, if the breast is not sufficient. If the breast is not available after an examination of the mother then artificial feeding is given. If the infant is ill, it is first treated for the illness. An illness not involving the gastro-intestinal tract is rather aided to recovery by feeding properly. If the gastro-intestinal tract is involved, the physician first carefully guides the infant through severe illness to the proper food. This is the method, it seems to me, which should be introduced in all clinics. The first result of furnishing the proper food for the infants is to relieve the mother of an amount of time-consuming work, the next is to insure to the infants with mothers not so intelligent the proper food. The ultimate results show in decided reduction of morbidity if not mortality.

Adaptation to Environment.—Surely that much-abused philosopher, Lamarck, was not far from the truth when he said, "The production of a new organ in an animal body results from a new requirement which continues to make itself felt, and from a new movement which this requirement begets and maintains." Is not this merely another way of saying that the individual makes adaptive responses to environmental stimuli? Where so many people fall foul of Lamarck is with regard to his belief in the inheritance of acquired characters. But in speaking of acquired characters Lamarck did not refer to such modifications as mutilations; he was obviously talking of the gradual self-adjustment of the organism to its environment.—Arthur Dendy, *Medical Journal of Australia*.

2. Koplik, Henry: The Sterilization of Milk at Low Temperatures and the Equipment of Milk Laboratories for Infant Feeding, New York Med. Jour., Feb. 4, 1893.

END-RESULTS FOLLOWING THE YANKAUER OPERATION ON THE EUSTACHIAN TUBE*

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Ear Infirmary

BOSTON

In 1910, Dr. Yankauer published a report of twenty-one cases in which the bony end of the eustachian tube had been curetted for the purpose of shutting off infection from the nasopharynx and thereby curing chronic suppuration of the middle ear. According to Dr. Yankauer, middle-ear structures were removed in only two cases. Polypoid tissue was removed only when it became necessary to allow room for operation.

Most of the patients were using drops or powder at the time of operation and were allowed to continue. Syringing the middle ear was also a part of the post-operative treatment. Granulations were touched with silver nitrate.

The average time required for healing was six months. Sixty per cent. of the patients were cured. No mention, however, was made as to the condition of the tube at the final examination of the patients.

In a later paper, read before the Otological Congress in 1912, Dr. Yankauer emphasized the necessity of treating pathologic conditions of the nose and throat, before a suppurative process of the middle ear could be cured. He also advised the removal of sloughing ossicles and polypi.

The following is a report of twenty-five cases in which the Yankauer operation was performed at the Massachusetts Charitable Eye and Ear Infirmary, during 1913, by courtesy of Drs. Crockett and Mosher.

The duration of discharge has ranged from two to thirty-five years, with an average of sixteen years. The Roentgen ray has shown nearly all of the mastoids sclerosed, the sclerosis varying in degree from a slight density to complete obliteration of the cells. Transillumination, with Dr. Mosher's transilluminator, showed little light passing through the mastoid.

All the patients were given a hearing test before operation. Most of them were suffering from some pathologic condition of the nose or throat, from which the ear trouble undoubtedly had its origin.

The operation consisted of denuding the bony eustachian tube as far as the isthmus. The ossicles were not removed, granulations were not disturbed, and no medication whatever was used. Postoperative treatment consisted in wiping the ear dry several times a day. Three patients complained of dizziness following the operation, one of whom was admitted to the hospital, and remained in bed about two weeks. Dizziness gradually disappeared.

The radical mastoid operation has been performed on four of the patients since the tube was curetted. Two of these had a very foul discharge containing flakes of cholesteatoma, with no apparent improvement from operation. The other two developed symptoms of acute mastoiditis about two months after curetting the tube. The mastoid operation disclosed a large antrum containing cholesterol and pus.

In three of the cases, the tube was curetted a second time, and the remaining ossicles and outer attic wall

were removed. In two cases the nasal septum was straightened and the nasopharynx curetted.

Ten months have elapsed since the first operation, and about seven since the last, with an average of about eight and one-half months.

Many of the tubes have opened and closed several times since operation. Several cases in which the ear has been perfectly dry, at least once since operation, now show a profuse discharge.

Bands of adhesions extending from the anterior portion of the tympanic ring to the promontory were noted in three patients. In most cases the granulations showed a tendency to shrink down as the ear became dry, although the tube remained open.

A second hearing test was made on eleven patients. Five showed slight improvement in air conduction. The patient showing the most marked improvement increased from 8/35 to 2/25 voice sounds, and from 128 to 64 fork. There was no improvement in the remaining patients tested.

Recent examination of the above cases discloses the following condition:

Tubes open with granulations and discharge.....	11 cases
Tubes closed with ear discharging.....	1 case
Tubes open with ears dry.....	8 cases
Tubes closed with ears dry.....	1 case

Out of the twenty-five cases, in but one has the tube remained permanently closed with ear dry.

Of the tubes reported open with ears dry, three have been curetted a second time, and in two other cases the nasal septum has been straightened and adenoid tissue removed.

A certain percentage of chronic mastoids with cholesteatoma will eventually require a radical operation to bring about a cure. In this type of case curettage of the tube may, as a result of the reaction in the middle ear, cause an acute mastoiditis, as in the two cases noted above.

After eliminating cases of chronic suppuration, in which the radical operation is necessary, we have remaining a class of cases in which the former treatment has been the removal of sloughing ossicles and polypi, together with the correction of pathologic conditions of the nose and throat.

Does curettage of the eustachian tube add anything to this treatment? In my experience it is of very little value.

I do not believe that it is possible to close the eustachian tube permanently.

535 Beacon Street.

ABSTRACT OF DISCUSSION

DR. HARRIS P. MOSHER, Boston: When Dr. Yankauer brought out his work, it seemed revolutionary to me and I could hardly believe it in all respects true. Very soon he modified his procedure. Dr. Lougee has taken the trouble in twenty-five cases to follow out Yankauer's procedure as given in his successive papers, and his conclusions, as you see, are just the opposite to those of Dr. Yankauer. Out of twenty-five cases he has had only one good result. In most cases I do not know whether we should attempt to close the tube or to regard the closure as not necessary and not attempt it. I rather feel now that the tube should be disregarded and attention paid entirely to the middle ear.

DR. G. W. MACKENZIE, Philadelphia: I favor the Yankauer operation in selected cases. I am afraid our failures are too often due to their improper selection. Dr. Yankauer's operation is particularly fitted to those cases in which we have done a radical operation for chronic middle-ear suppuration

* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

and we feel sure that the spaces in and behind the attic are clear but the discharge persists with a patent tube. My results in about two-thirds of the cases have been very satisfactory, though in some the tube remained patulous. One criticism of Dr. Lougee might be offered concerning the cases in which on operation he found cholesteatoma. They should not be accepted as fair tests. To determine the presence of cholesteatoma by examining with the microscope for cholesterol crystals is very simple. Before we criticize the operation too severely, let us not forget that we want to find out whether or not the operation is really indicated. When the attic or mastoid is involved, of course the Yankauer operation is not indicated, but, in those cases in which we can exclude these regions and limit the pathologic process to the tube, the Yankauer operation will give good results, and, furthermore, if done thoroughly and effectually, it must succeed, for the single source of infection has been eliminated.

DR. JOHN L. LOUGEE, Boston: With regard to Dr. MacKenzie's remarks concerning the selection of cases, I admit that I did not examine the secretions microscopically for cholesteatoma. It would be difficult to select the cases that would be proper for operation. The time of duration of the discharge varied from two to thirty-five years. It is very hard to tell what is going on in the mastoid, even with the aid of the Roentgen ray. I think closing the tube temporarily may be a means of setting up a mastoiditis by shutting off drainage.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. THEIR ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT AND IN PART ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS ARE ASKED FOR TO AID IN THE REVISION OF THE MATTER BEFORE PUBLICATION IN THE BOOK "NEW AND NONOFFICIAL REMEDIES."

THE COUNCIL DESIRES PHYSICIANS TO UNDERSTAND THAT THE ACCEPTANCE OF AN ARTICLE DOES NOT NECESSARILY MEAN A RECOMMENDATION, BUT THAT, SO FAR AS KNOWN, IT COMPLIES WITH THE RULES ADOPTED BY THE COUNCIL.

W. A. PUCKNER, SECRETARY.

ANTIMENINGOCOCCUS SERUM (See N. N. R., 1914, p. 239).

Lederle Antitoxin Laboratories, New York City (Schiefelin & Co., New York).

Antimeningococcus Serum (Antimeningitis Serum).—Marketed in one aseptic glass cylinder containing 30 Cc. with special sterile needle and syringe. Also in one 20 Cc. vial.

Dose.—Usually from 5 to 15 Cc. for infants and children and 30 Cc. or more for adults are given at each dose, which should be repeated at twenty-four hour intervals. The treatment of one case usually requires 120 Cc. or more.

GONOCOCCUS VACCINE (See N. N. R., 1914, p. 250).

Greeley Laboratories, Inc., Boston.

Gonococcus Vaccine.—Marketed in packages of six syringes each containing 500 million bacteria.

Lederle Antitoxin Laboratories, New York City (Schiefelin & Co., New York).

Gonococcus Vaccine, Polyalent.—Marketed in separate syringe packages containing respectively 50, 100, 200, 400 and 1,200 million killed bacteria.

PNEUMOCOCCUS VACCINE (See N. N. R., 1914, p. 253).

Greeley Laboratories, Inc., Boston.

Pneumococcus Vaccine.—Marketed in packages of six syringes each containing 500 million bacteria.

STAPHYLOCOCCUS VACCINES (See N. N. R., 1914, p. 254).

Greeley Laboratories, Inc., Boston.

Staphylococcus Albus Vaccine.—Marketed in packages of six syringes each containing 1,000 million bacteria.

Staphylococcus Aureus Vaccine.—Marketed in packages of six syringes each containing 1,000 million bacteria.

STREPTOCOCCUS VACCINE (See N. N. R., 1914, p. 257).

The Abbott Laboratories, Chicago (The Abbott Alkaloidal Co., Chicago).

Strepto-Bacterin (Huxan) Polyalent.—Marketed in packages of six ampules each containing 100 million killed bacteria; also in packages of six ampules each containing 200 million killed bacteria.

Greeley Laboratories, Inc., Boston.

Streptococcus Vaccine.—Marketed in packages of six syringes each containing 500 million bacteria.

Lederle Antitoxin Laboratories, New York City (Schiefelin & Co., New York).

Scarlet Fever Treatment.—Marketed in packages of four vials containing respectively 50, 100, 200 and 400 million killed bacteria.

TYPHOID VACCINE (See N. N. R., 1914, p. 259).

Greeley Laboratories, Inc., Boston.

Typhoid Bacillus Vaccine.—Marketed in packages of six syringes, each containing 1,000 million bacteria; also in packages of six syringes containing respectively 100, 200, 400, 600, 800 and 1,000 million bacteria.

Therapeutics

PREVENTION IS GREATER THAN CURE

(Continued from page 1479)

VI.

VACCINATION AGAINST TYPHOID FEVER

The importance of the prevention of this disease is self-evident when it is stated that about 500,000 people are attacked by it and more than 35,000 deaths occur from it annually. Of these about 150,000 cases occur and about 25,000 die of it annually in the United States. The economic loss from expenses due to illness and to the loss of productive lives is simply enormous, and is stated by economists to represent, in the United States alone, a financial loss of about 300 million dollars a year.

The usual mortality of typhoid fever is about 10 per cent., while the protection from the recurrence of typhoid, the patient having once survived it, is represented by more than 95 per cent.; that is, less than 5 per cent. of persons attacked have a recurrence.

The most frequent cause of typhoid fever is infected water and infected milk. Washing uncooked vegetables and fruit with infected water may also more or less frequently cause the disease. As long ago as 1894 it was shown that oysters could become contaminated with water which received infected sewage, and when served uncooked could cause typhoid fever. The culpability of oysters under such conditions has been shown frequently, although some bacteriologic investigations indicate that the pathogenic bacteria from the human intestinal canal are rarely found in oysters. It has been demonstrated beyond controversy, however, that oysters fattened in fresh-water polluted streams may harbor pathogenic germs and, when served uncooked, transmit them to the human being. As it has been shown that oysters do not feed much in cold weather, the danger from their contamination in the cold months is less than in the warm months. Also, the danger of oysters becoming infected has been diminished by the decree by most boards of health that oysters must not be deposited in fresh water for fattening or in water near the shore that readily becomes contaminated with sewage.

For a long time it was not satisfactorily proved that round clams could become infected with typhoid bacilli. Hence the "little necks" have long been eaten raw by those who refused to eat raw oysters. It has been shown lately, however, that round clams may be suspiciously contaminated with sewage germs, although no positive decision that cases of typhoid have emanated from eating such raw clams is known. Long, soft-shelled clams are almost invariably eaten cooked, hence the danger of contamination from such shellfish is at a minimum.

Another source of danger from typhoid fever is that due to flies. These may carry on their feet typhoid as well as other germs and deposit them on foodstuffs in markets, in kitchens, and on the dining table. Consequently, flies are a serious menace to the health of a community. Possibly the greatest number of cases of typhoid fever occur in the early fall months because this is directly after the greatest fly period. Ninety-five per cent. of flies are born in manure heaps; therefore the most important method of exterminating the fly pest is to prevent their growth in manure heaps. The United States Department of Agriculture, in *Bulletin 118* states that a small amount of borax sprinkled daily on horse manure will prevent flies from breeding.

Borax should also be sprinkled over garbage (especially when not intended for feeding to pigs), over all refuse heaps and open toilets, and it may be sprinkled on the floors of markets. While borax will not kill the grown fly, it will prevent fly eggs from hatching. The cost of borax in Washington is between 5 and 6 cents per pound in 100 pound lots, and it is estimated that it would cost only 1 cent a day per horse for the borax treatment of stables.

Contaminated dust may infect food, and may occasionally be a cause of this disease.

Although the germ of typhoid fever always emanates from the discharges of persons sick with the disease, the danger from carriers who may for years continue to produce the living germs must never be forgotten. Therefore, every sewage system and every privy vault is open to suspicion. The water at sea-shores, or even fresh water not protected from contamination, should not be swallowed or taken into the mouth by bathers. Sanitary privies should be rapidly introduced, and when this is not immediately possible, means of killing the germs in human fecal matter should be constantly used. All toilets and privies should be screened from flies, and any stable or barn where milk is handled should be under suspicion if the place is dirty, dusty, and fly-infested. All foods should be under suspicion if exposed to dust and flies. The purification of water-supplies is a question for state and municipal boards of health, and failure on their part to supply to all communities pure, clean water is open to the criticism of negligence and incompetency. Great improvement, however, is being made in many communities in these respects.

In 1893, Fränkel first published his observations on the inoculation treatment of typhoid fever. In 1896, Wright published his first article on antityphoid inoculation. The British first introduced inoculation in the Indian army for the prevention of typhoid fever and demonstrated that the individual was protected by such inoculation for two and one-half years, and partially immunized for five years. In 1900, inoculation prevention was used by Germany, also, in her armies, and German and English military camps soon became

almost free from typhoid fever by such protective vaccination.

The danger to an army from typhoid fever, especially during war times, when it is encamped in regions not previously equipped to care for large numbers of men in a sanitary manner, is well shown by the statement that one-fifth of the soldiers in a national encampment of our men in the Spanish-American war had typhoid fever, the actual figures being that out of 107,973 men, 20,728 had typhoid fever, of which number 1,580 died. It is also stated that in 90 per cent. of the volunteer regiments the disease broke out within eight weeks after going into camp.

In spite of all sanitary measures possible, typhoid fever will prevail until the preventive vaccination is inaugurated. With the inauguration of this measure in the United States Army typhoid fever became greatly diminished in frequency. Vaccination of our army was begun in 1909, and, in 1911, among 80,000 men only 11 cases of typhoid fever occurred, with one death. In 1912 there were 15 cases in the army, with 2 deaths. This shows that occasionally the typhoid inoculation does not protect, but the improvement shown by the diminution in the number of typhoid cases from 9.43 cases out of every thousand soldiers in 1901, to 0.26 for every thousand soldiers, in 1912, compels belief in its efficiency. The death-rate from this disease decreased, per thousand soldiers from 0.64 in 1901 to 0.03 in 1912.¹

The incubation period of typhoid fever is about two weeks. Its duration, when there are no relapses, is about two months. This means two weeks of incubation, four weeks of more or less serious illness, and two weeks before the real convalescence. Young adults and youth are most likely to contract this disease, although it may occur at any age. This is the age, then, for the greatest effort to be made to give protective inoculations. All nurses and members of hospital staffs; students of colleges and seminaries; employees, and those who are interned in work houses, jails, prisons and asylums; men in lumber camps; and all those who travel and are therefore subjected to varying water, milk and food-supplies, such as "traveling" men, engineers, seamen, tourists, and vacationists, should receive typhoid preventive vaccination.

While it has been asserted that immunity is more positively conferred for a long period by vaccination with living bacteria (protection being similar to that produced by an attack of typhoid fever) still it is generally considered safest and best to vaccinate with dead bacteria. The vaccine slowly stimulates the production of antibodies, that is, in from five to eleven days, with an average of eight days. Some time later there is an increase in the opsonins and agglutinins. The blood generally shows the Widal reaction after the third inoculation. One case was found negative.²

Though it has been denied, it seems to be a fact that typhoid vaccine can cause a reaction similar to tuberculin in those infected with tuberculosis.

It has been shown that there is a skin typhoid reaction test similar to the von Pirquet tuberculosis skin test. Gay and Force found this test positive in 20 cases out of 21 (95 per cent.) patients who had recovered from typhoid fever. The same test was negative in 85 per cent. of 41 cases who had not had typhoid fever. This method may become valuable as

1. Russell, F. F.: House of Representatives Document 1404, Feb. 19, 1913.

2. Maverick, Augustus: Typhoid Vaccination and the Widal Reaction, THE JOURNAL A. M. A., June 1, 1912, p. 1672.

a test for the continuation of typhoid immunity after typhoid inoculation.³

With all the advantages to an individual and to a community conferred by protection against typhoid fever by vaccination, the physician must also carefully consider what constitutes contra-indications. It seems to be wise carefully to examine every individual to ascertain his condition of health before vaccination is done. It should not be done if he is suffering from any acute infection however simple, namely, a coryza, a pharyngitis, a tonsillitis, or any acute gastro-intestinal disturbance, gonorrhea, syphilis, albuminuria, glycosuria, or the more serious conditions of chronic nephritis or diabetes. The injections should be made in the afternoon, and the active symptoms will generally be gone by noon of the next day. Three injections should be given at weekly intervals.

There is a systemic reaction in about 7 per cent. of the cases, most frequently after the second dose, next in frequency after the first dose, and least frequently after the third injection. The temperature reaction varies, with an average of about 100 F., associated with malaise, rarely diarrhea and some nervousness and sleeplessness. Sometimes erythemas occur, and occasionally a herpes on the lips. Generally all active symptoms have disappeared in forty-eight hours. Every person inoculated with this vaccine should avoid alcohol and all stimulants, should not eat meat, should keep out of the sun, and should not take much exercise. While in the army the vaccinated men were allowed to do ordinary work, in private practice it is inadvisable to allow any exercise during a real reaction. If there is no reaction, the inoculated individual may do ordinary work on the following day.

It has been shown that paratyphoid fever may also be prevented by vaccination with the paratyphoid germs. It seems wise, therefore, in vaccinating against typhoid, to vaccinate with the combined vaccine of typhoid and paratyphoid. The ordinary adult doses for injection are as follows: The first dose may contain 500 millions of the killed typhoid bacilli, 250 millions of the killed "A" paratyphoid bacilli, and 250 millions of the killed "B" paratyphoid bacilli. The ordinary second dose is double this number of dead bacteria, respectively (1,000 millions of killed typhoid bacilli, 500 millions of killed "A" and 500 millions of killed "B" paratyphoid bacilli). The third injection represents the same number of killed bacilli as the second injection.

The method of injection is as follows: Paint with tincture of iodine an area about 15 mm. in diameter at the insertion of the deltoid muscle. Inject subcutaneously with sterile needles and the best vaccine the dose of killed bacteria decided on. Then paint the region with collodion and allow it to dry. If proper care is taken, no infection will occur, and, as above stated, a temperature reaction is rarely above 100 F., and perhaps never reaches as much as 102 F., even in exceptional instances. A severe reaction could only occur when there is some serious complication in the individual, as perhaps tuberculosis. All slight reactions are generally over in twelve hours and even severe ones are generally over in twenty-four hours.

The local reaction is greatest after the first dose, less after the second, and least after the third. Typically, there is an acutely inflamed area, varying in size, not hard and indurated like an incipient

abscess. The arm may ache, and the axillary glands may become tender. The local reaction is generally at its height in about ten hours, and generally nearly gone in twenty-four hours. Any more severe reaction would be due to contamination.

The dosage for children should be based on the child's weight and not on its age. The recommended adult dose is based on a weight of 150 pounds. It seems to be necessary for continued protection to revaccinate children more frequently than adults, namely in about three years. The skin test above referred to may become a means of ascertaining whether, or not, the individual is still protected. It should be remembered that almost one-third of all typhoid deaths occur in persons under 20 years of age.

Typhoid vaccination as a treatment during the course of typhoid fever has not been much used. The theory against such vaccination is that it has seemed unwise, in any disease, to vaccinate and to stimulate an acute process, it being considered that the individual is utilizing all of his combative powers in fighting the infection that he already has. We must note, however, that cases are beginning to be placed on record in which it seems that relapses are prevented and that post-typhoid complications such as typhoid infection of the ears, kidneys, gall-bladder, etc., may be prevented by the judicious use of an antityphoid vaccine. Hospitals, which are the best prepared to carefully watch and judge of the advantages conferred by these injections, should investigate this subject. Until statistics are available, it may be well not to inject these bacilli until such time as the patient is shown to be a typhoid carrier. It is stated that stock vaccines in these instances are as valuable in preventing relapses as are autogenous vaccines.

About 4 per cent. of typhoid-cured patients become chronic carriers. As above urged, a most serious danger to any community is a typhoid carrier, and unfortunately it is difficult to discover such. As prevention is here also greater than cure, it is a question for the board of health to decide when a typhoid patient shall be released from quarantine, that is, allowed to deposit his urinary and fecal excretions in the sewers or privies without disinfection. Also a carrier may contaminate his hands with living typhoid bacilli, and thus spread the disease. This probably means that the feces and urine should be repeatedly examined by the board of health until typhoid bacilli are found to be absent. This would be a difficult problem, and would interfere more or less with individual freedom, but from an economic standpoint it would be the most money, health and life-saving work that a board of health could inaugurate.

A chronic typhoid bacillus carrier having been discovered (and such are only discovered by the attending physicians, hospitals, and boards of health being ever alert), he or she should be isolated and treated. Hexamethylenamin may cure a kidney infected with typhoid germs. Typhoid bacilli vaccines seem to offer the most successful treatment of these typhoid carriers. Whether they are best treated with stock vaccines or with autogenous vaccines is yet to be determined. Also, the frequency with which such cases are cured is not yet decided. If operative interference would remove the infection, it should be advised. This is especially true in cases in which either the gall-bladder or the ear is the suspected source of infection.

(To be continued)

3. The technic of this test will be found in Arch. Int. Med., March 15, 1914, p. 473.

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THE BEGINNINGS OF PHYSICOCHEMICAL METHODS IN THE MEDICAL SCIENCES

The physician who has received his scientific training in recent years, and likewise he who, though schooled in an earlier era, has not allowed the progress of knowledge to leave him stranded on the shores of superseded ideas, is often prone to forget the beginnings of the learning which we call modern. Osmotic pressure, isotonic solutions and the ionic theory are familiar expressions. The brilliant contributions of van 't Hoff and Arrhenius have furnished the impetus for much in the more recent development of the medical sciences. To quote an eminent physiologist, it is impossible to-day to think of a scientific physiology or pathology in which the conception of osmotic pressure plays no part. It has furnished explanations for details of the chemistry of the circulation and the genesis of edema. The theories of narcosis and of disinfection have drawn heavily on it. Bacteriology and histology, with their problems of permeability and their technic of staining, have benefited by the present-day conceptions of osmotic pressures. Experimental embryology can point to the work of Loeb and his followers as a fruitful exemplification of the usefulness of the idea; for artificial parthenogenesis has long employed the physicochemical methods, and the newer culture of living tissues cannot neglect the theory of solutions.

In the light of the wide-spread importance of the subject—an importance that manifests itself in a practical way whenever a saline infusion is administered—it ought to interest those who have any concern whatever for the beginnings of scientific practices to hear something of the history of the idea of isotonic solutions and all that it carries with it. Fortunately the story has lately been told by one who took a most active part in its performances, namely, the well-known physiologist, H. J. Hamburger of the Dutch University at Groningen.¹

It had long been known that many substances exhibit the property of "attracting water" to themselves. This

force, *wasseranziehende Kraft*, as the Germans called it, is of great significance in the life of plants, in which it accounts for some of the movements of the sap and the unfolding of the parts. As early as 1844 Mitscherlich is said to have attempted to measure it in a quantitative way; but it was the botanist Hugo de Vries who described the first really successful methods at Amsterdam in 1882. By selecting solutions of various concentrations of the same substances he demonstrated that a definite strength always induced plasmolysis, that is, the beginning of shrinkage in the contents of plant-cells away from the walls of the latter. All solutions that just initiated this effect were termed isotonic by de Vries.

Hamburger relates how his laboratory chief, Donders, who had heard de Vries present his result to the Academy of Sciences, discussed them with the young assistant in physiology. The question at once was suggested whether similar osmotic phenomena would apply to animal cells. Thereupon Hamburger, then still a beginner in science, started the classic experiments on the behavior of red blood-corpuscles toward salt solutions, showing as early as 1883 that those concentrations of different salts in solution which just induce hemolysis show the same interrelations as those which de Vries had found isotonic in his plant experiments. The modern era of the application of physicochemical points of view to research in the medical sciences may be dated from these investigations, not from van 't Hoff's theory of osmotic pressures which was in reality developed somewhat later (1885) in its physiologic relations. Soon 0.9 per cent. sodium chlorid solution was ascertained to be isotonic with blood-serum, and its use to replace the older strength of 0.6 per cent. begun.

It would take us too far afield to recall the varied consequences of the early establishment of the principles of osmotic pressure. In passing, the significant studies on the bearing of this factor in lymph formation and movement, in absorption from the bowel and from serous cavities, and in the permeability of all kinds of cells, are brought to mind. It has been a period rich in suggestions and fruitful in results. We do well to present its beginnings in their true relations.

PROBLEMS OF THE FEEBLE-MINDED

When legitimate methods of social inquiry and scientific investigation take the place of superficial observation, which is now becoming the case regarding the treatment of mentally defective children, it may be assumed that moot questions will be solved to the mutual satisfaction of all interested in the subject. It has been generally thought that an experienced observer can differentiate the feeble-minded from the normal by certain marked signs or tests. Thus, Barr has stated that "feeble-mindedness, including idiocy and imbecility, is a defect either mental or

1. Hamburger, H. J.: *Zur Geschichte und Entwicklung der physikalisch-chemischen Forschung in der Biologie*, Internat. Ztschr. f. physik. chem. Biologie, 1914, i, 6.

moral or both, usually associated with some physical stigmata of degeneration." In a recent study by Karl Pearson,¹ contrary evidence is offered by groups of photographs showing feeble-minded, normal or mixed types of children of the same age. The observer will have difficulty in determining which of the children shown are the mentally defective. There seem to be no obvious stigmata differentiating one from the other, and in view of new evidence, for example, that the palates of the mentally defectives do not differ from those of the normal, and that the retina of imbeciles is not more often pigmented than the normal, it must be concluded that though physical stigmata may exist, scientific evidence is lacking to prove that they are pathognomonic. On the other hand, considering the question of mental differentiation, the recent work of Jaederholm² is taken as a center point. Pearson and Jaederholm have shown that any classification of children as mentally defective, below four years of mental defect, must either depend on the personal equation of the investigator, or be settled by other factors such as moral or physical deficiency.

Pearson takes issue with many other workers in the field of eugenics regarding the differentiation between the normal, feeble-minded or the mentally backward. The importance of a correct determination of these various classes for purposes of segregation and the protection of society can hardly be overestimated, and yet there are lacking truly scientific studies necessary to determine these problems. It is necessary to learn to what extent the mentally defective class is produced by inheritance, improper environment, or from poisoning of the parental system. Although there exist numerous casual investigations of the heredity of mental defects, there seem to be lacking adequate anthropometric measurements of the feeble-minded compared with controlled series of normal children, as well as psychometric studies and a purely scientific investigation of the factors of heredity and environment. The settlement of these questions cannot come from the physician alone, nor will the social investigator be able to determine it.

From our present knowledge we are not able to segregate all the feeble-minded. Although a mental test may strain off 20 or 30 per cent. of the so-called feeble-minded, beyond that point it is not reliable. What are needed are tests of self-control of emotions, of feelings and relation to social duties; in other words, tests of moral judgment. Until this type of investigation is adopted, segregation of the feeble-minded will be a matter of the personal equation of the investigator. These problems are vital and affect every community. They are not alone the care of the

physician, but of all persons. The physician, however, must be able to determine early the need of help when it exists and be able to direct the proper procedure to better the conditions.

THE CAMMIDGE REACTION IN THE URINE—DEXTRINURIA

In 1904 Cammidge described a reaction, easily carried out in urine, which he frequently observed in the case of persons suffering from pancreatic disease and regarded as a useful indication in the oftentimes difficult diagnosis of affections of the pancreatic gland. The test involves the production of characteristic osazone crystals with the phenylhydrazine reagents after boiling urine, free from protein and preformed sugar, with hydrochloric acid. Apparently some complex carbohydrate-like substance is present in the reacting urines; and by hydrolysis with the acid, osazone-yielding products are produced. The directions for the procedure, which can be found in text-books on clinical diagnosis, include certain analytic details that must be carefully followed.

The clinical study of the diagnostic value and physiologic significance of the new "test" was promptly and eagerly undertaken. The conclusions in reference thereto have been conflicting, as is usually the case when a diagnostic novelty is initiated with unbounded enthusiasm. The physiologic chemist has been particularly interested in the possible nature of the substance responsible for the Cammidge reaction. Obviously it is something present in minute quantity, if at all, in normal urine; and it is devoid of the reducing power and other properties of most preformed sugars, otherwise it would reveal itself even without preliminary hydrolysis. Sucrose, pentoses, conjugated glycuronates, dextrans or so-called animal gums—all have been drawn into consideration by the different investigators.

The latest contribution on the subject, from the Physiologic Laboratory and the Surgical Clinic at Utrecht,¹ has confirmed the fact that the urines of different persons show a great difference in their tendency to exhibit the Cammidge reaction. Recalling the older observations of Baisch² and Lemaire³ on the occurrence of small amounts of dextrin-like substances in the urine of healthy individuals, Pekelharing and Van Hoogenhuyze renewed the investigation of these poorly defined products, despite the fact that Cammidge himself did not regard the urinary dextrin as responsible for his reaction. They found, as a result, that urines in which the Cammidge test is positive, yield a larger amount of the indefinite dextrans than does normal urine. Furthermore, they ascertained that after hydrolysis these substances

1. Pearson, Karl: *Mendelism and the Problem of Mental Defect. III. On the Graduated Character of Mental Defect and on the Need for Standardizing Judgments as to the Grade of Social Inefficiency which Shall Involve Segregation*, London, 1914.

2. Pearson, Karl and Jaederholm, J. A.: *Mendelism and the Problem of Mental Defect. II. The Continuity of Mental Defect*, London, 1914.

1. Pekelharing, C. A., and Van Hoogenhuyze, C. J. C.: *Ueber die Cammidge'sche Pankreasreaktion*, *Ztschr. f. physiol. Chemie*, 1914, xci, 151.

2. Baisch, K.: *Ztschr. f. physiol. Chem.*, xviii, 193; xix, 339; xx, 249.

3. Lemaire: *Ztschr. f. physiol. Chem.*, xxi, 442.

yield the same types of osazones, with the characteristic shape, solubility, etc., as one obtains in the routine Cammidge test. The latter may thus be interpreted as the indication of a dextrinuria—or at least of an output of dextrin greater than is met with in ordinary experience.

Dextrinuria can be elicited in healthy persons by the excessive use of sugar. The Cammidge test has been obtained after ingestion of as little as 50 gm. (less than 2 ounces) of glucose or fructose. It has been observed within a few hours after eating 175 gm. of cane-sugar, although glycosuria was missed. The fact that the undue intake of sugar may occasion dextrinuria in healthy persons even before any glycosuria manifests itself may help to explain why the Cammidge reaction is reported to be positive in cases of pancreatic disease which have not yet progressed to the point at which true diabetic symptoms ensue. The study of dextrinuria, if it shall be established as a clinical entity, may furnish something of value in relation to carbohydrate metabolism. It is not unlikely that satisfactory quantitative methods of investigation—such as the estimation of the reducing power of the urine after hydrolysis—can be introduced into this field.

THE RELATION OF SEWAGE DISPOSAL TO WATER SUPPLY

The future development of large public water-supplies in this country is likely to involve the purification of surface waters rather than the utilization of ground water sources. Useful as the latter are under many conditions, they, nevertheless, in many regions are inadequate to supply the enormous demands of American municipalities. It is well known that surface waters in general are more or less contaminated. In the practical treatment of the water-supply problem the degree of sewage pollution that is admissible in the water to be purified has become more and more of a definite issue. There is now a sufficient amount of evidence to show that a dangerous situation is created when a great burden is placed even on the best constructed and most skilfully operated filter. If the water to be treated is very highly polluted the likelihood of accident is increased many times.

A noteworthy attempt to establish some sort of working standard for the character of raw water has been made by McLaughlin in a paper published in this number of *THE JOURNAL*.¹ This writer believes that in order to allow for a proper margin of safety the number of *B. coli* in the raw water should not range over 100 to 500 per hundred c.c. With such a water it is supposed that proper filtration—slow sand or mechanical—constitutes a reliable

safeguard against water-borne infection. It must be admitted that the data on which such considerations are based are not very extensive, but so far as they go, they appear to justify McLaughlin's position. If the establishment of such a standard finds acceptance among water experts, it would seem to be desirable, by the use of hypochlorite or other means, to reduce the number of *B. coli* in highly polluted waters to not more than 500 per hundred c.c. before reliance is placed on ordinary filtration methods.

One merit of such work as McLaughlin's, based as it is on large practical experience in the field and laboratory, is that it brings into the open a very important question for discussion and further investigation. No one knows better than the experienced student of water bacteriology that the establishing of any standard opens the road to abuse and misconception. But it is of great advantage to have a definite standard proposed which can be discussed, compared with the varying experiences of different observers, and serve as a guide for interpreting the routine analyses which are sometimes accumulated without much understanding of their true significance.

McLaughlin suggests further that a content of two *B. coli* per hundred c.c. be accepted tentatively as the limit permitted for a good drinking water. He points out that at present a number of filter plants dealing with a badly contaminated raw water are able to yield a water which comes up to this standard. Although the commission appointed by the Surgeon-General of the United States Public Health Service to consider this matter has not yet made its formal report, we understand that its recommendations coincide with the standard proposed by McLaughlin, who, perhaps, has based his own opinion somewhat on the discussions of the commission. While this is not so severe a requirement as that advocated by Houston, director of water examination of the London Metropolitan Water Board, it is, nevertheless, more rigorous than would have been advanced in this country a few years ago.

Sooner or later the question will arise in connection with such standards as to how far the community is willing to go in the matter of protecting itself against water-borne infection. It is idle to insist that absolutely no chances must be taken, since accident and death are being continually risked in many other directions. The question will eventually come down to the expenditure that will be deliberately made in order to escape a given degree of danger. It is physically possible to sterilize absolutely any city water-supply, but few cities are prepared to face the expense necessary for complete removal of bacteria, pathogenic and non-pathogenic. McLaughlin's very interesting and suggestive paper dealing with the degree of permissible sewage contamination of raw waters and the allowable minimum of purification will tend to form opinion on this practical problem.

1. McLaughlin, A. J.: The Necessity for Restriction and Control of Sewage Pollution of the Great Lakes System, *THE JOURNAL A. M. A.*, this issue, p. 1555.

THE DIFFUSION OF KNOWLEDGE OF THE
MEDICAL SCIENCES

The science of medicine, like that of agriculture, has been the subject of extensive investigation and intensive study in the last half century, with the result that our fund of knowledge in both of these domains of interest has been greatly augmented. Even to-day, as in the past few decades, we are witnessing the continued organization of forces and institutions intended to promote not only medical and agricultural sciences, respectively, but likewise their practical application. Only he who is blind to what has been accomplished would deny the advantages which have accrued wherever intelligent use has been made of the contributions involved in the fundamental discoveries. The practice of medicine, like the art of agriculture, is more and more becoming transformed into a scientifically controlled performance.

We have been reminded of the similarity of experience in the realms of agriculture and medicine by reading a recent report from one of the leading agricultural experiment stations of the United States.¹ This document points out that whereas in the earlier years of the modern scientific movement in agriculture, much emphasis was laid on the study of the physical and biologic problems of production, there is now need of greater attention to the economic forces involved in distribution. It has become important for the farmer to learn when and how to market his produce, quite as well as what to produce and how to produce it most economically.

Precisely so, modern medicine must be judged in part by the practical advantages secured through its investigations. Medical research needs the help of some force or forces which will serve not only to spread broadcast the story of its beneficent discoveries, but also to teach where and how they may be applied. There is room for added agencies which will translate the findings of the laboratories into the requirements of practice. The new contributions of hemodynamics deserve speedier recognition in the clinic of diseases of the heart; the latest experiences with synthetic drugs should be made to suggest possible applications in bedside therapeutics; the progress of the modern study of nutrition might well be carried more freely into the domain of practical dietetics. There are, furthermore, aspects of medical science which the general public is entitled to know and to be instructed in.

Modern agriculture already has effective helps at hand to bring its scientific contributions forcibly to the attention of those who need to apply them. Medicine likewise has ways of spreading its propagandas; but are we not justified in calling for more talent and greater activities in teaching the lessons of the hour more promptly and effectively? The duty of the "diffusion of a knowledge of the medical science"—to

quote the motto of the Harvey Society of New York—is worthy of serious consideration in the midst of the ceaseless investigations of the present day.

In his address as president to the Physiological Section of the British Association for the Advancement of Science at the meeting in Australia this summer, Prof. Benjamin Moore of Liverpool urged the campaign of education from a still different point of view. It is particularly important at the present moment, he said, when so much interest is being taken in national health, to point out the urgent necessity of allowing as little lagging behind as possible to ensue between the making of discoveries and the practical application of the results by organized national effort for the well-being of the whole community. And, again, Moore said that it is well worth while to consider our opportunities and responsibilities and raise the question whether our present system and organization are the most suitable for attaining one of the most sublime ambitions that ever appealed to any profession. By definition, our science studies the laws of health and the functions of the healthy body; therefore, it is ours to lead in the quest for health. Is this object best achieved, Moore asks, if we confine ourselves to research in our laboratories, and to the teaching of the principles of physiology to medical students, while we leave the community as a whole uninstructed as to the objects of our research and its value to every man, and trust the medical students whom we turn out to communicate, or not, as they choose, the results of their training and our research to the world?

Current Comment

THE QUACKS' HOROSCOPE

If there were anything in astrology, we should have read something like this:

OCTOBER, 1914: This is a month in which Saturn rules strongly in favor of the public health, and while this configuration prevails, it augurs ill for quacks and charlatans. The horoscope of the medical faker presages danger, and those that are prudent will seek the cyclone cellar."

On October 7 "Professor" Samuels, the Wichita faker, was found guilty in the federal courts on eleven counts; the maximum penalty for each count is a fine of a thousand dollars and five years in prison. Samuels amassed wealth by swindling the sick and suffering by selling a mixture of sugar, salt and water as a cure for practically all diseases. His methods have been repeatedly exposed in *THE JOURNAL*.¹ On Oct. 22, 1914, Orlando Edgar Miller, late of Chicago and Denver, was sentenced to prison in London after being convicted of having caused the death of a woman by administering a drug while she was a patient in an alleged sanitarium he conducted. Miller will be remembered by readers of *THE JOURNAL* as the quack who exploited the so-called "International.

1. Wisconsin Agric. Expt. Sta., Report of the Director for 1913.

1. "Nostrums and Quackery," pages 282 to 287; also in the pamphlet "Medical Mail-Order Frauds," price 10 cents.

Institute for the Treatment of Tuberculosis" in Chicago. THE JOURNAL investigated² Miller and his "institute"; showed up the quack's record; proved that over 80 per cent. of his victims died under treatment and in general turned the search-light on the scheme. The exposé brought two results: one, an action for libel against THE JOURNAL which never came into court; the other, the downfall of Miller's "institute." On Oct. 21, 1914, Dr. Richard C. Flower was arrested in Canada on a charge of grand larceny. Flower has been a fugitive from justice for some years and is said to have swindled the public out of more than a million dollars. He founded the "R. C. Flower Medicine Company," a mail-order medical fraud whose president was B. O. Flower,³ president and one of the founders of the "National League for Medical Freedom." Altogether, the present month has proved a bad one for medical fakers.

ALLEGED MODIFICATIONS OF THE GASTRIC JUICE

Not long ago we reviewed the evidence indicating that the acidity of the gastric juice of man is decidedly higher than is commonly believed; and an explanation was offered for the familiar figures found on analysis of gastric contents instead of the concentration of about 4 per thousand (0.4 per cent.) of hydrochloric acid indicated by a large number of examinations of pure human gastric secretion.⁴ The deviations from this higher figure are, as it now appears, not due to variations in the concentration of the juice actually produced, but rather attributable to the neutralizing effect of substances like mucus, etc., with which the juice comes into contact in greater or lesser degree. This fact has raised new questions with respect to the interpretation of alleged cases of hyper- or hypo-acidity. To what extent are high or low figures for hydrochloric acid due to variable admixture or hitherto unsuspected regurgitation of alkaline duodenal contents? The new point of view here presented has also occasioned some uncertainty regarding the experimental devices which have been described for initiating conditions comparable with those in human gastric pathology. It is generally admitted that the volume of the secretion can be profoundly influenced both by the character of the diet and by reflex stimuli which are initiated in the intestine beyond the stomach. Further than this, it has been asserted that the acid concentration of the gastric secretion is likewise affected. To cite a specific illustration, Cohnheim⁵ believed that he could induce a true pathologic hypo-acidity by the introduction of common salt into the duodenum; and correspondingly an abnormal hyper-acidity was reported as the result of introduction of Epsom salt. Newer investigations in the pathologic institute of the University of Berlin⁶ fail entirely to

substantiate the foregoing. It is true that the quantity of gastric secretion can be decidedly modified by such procedures. Its volume is enhanced by magnesium sulphate and diminished by the presence of sodium chlorid in the bowel. The quality of the gastric juice, however, is not altered by these salts.

STANDARDIZING COLLEGES OF LIBERAL ARTS

Following the remarkable improvements in medical education resulting from the inspection and classification of medical colleges, a decided movement has been started toward the standardization of colleges of liberal arts. Within the last year the Association of American Universities has published a list¹ of 119 colleges and universities the degrees of which are recommended to German universities as an acceptable qualification for entrance to courses for higher degrees. Another list of approved colleges has been published² by the North Central Association of Colleges and Secondary Schools, for the fifteen states under the jurisdiction of that organization. This list has seventy-two colleges, including thirty-five which are also on the list of the Association of American Universities. A third organization, the Association of Colleges and Secondary Schools of the Southern States, is also contemplating the publication of an approved list. The United States Commissioner of Education has issued invitations to fourteen different organizations, including the Council on Medical Education of the American Medical Association, to appoint representatives who will cooperate in the work of classifying colleges and universities. Since the entrance requirement for all medical colleges in classes A+ and A now include at least one year of collegiate work in addition to a standard high school education, such a classification will be of great service in deciding what credentials are acceptable.

COLLOIDAL NITROGEN COMPOUNDS IN THE URINE

Not long ago we took occasion to record a controverted claim emanating from the clinical study of cancer and to point out how short-lived many of the hypotheses with respect to the metabolism in this disease have been.³ The unfulfilled promise in the instance alluded to concerned the alleged augmentation of the so-called oxyproteic acid fraction of the urine as a characteristic of carcinoma. As early as 1905 Salkowski⁴ called attention to the fact that the non-diffusible components of human urine appear to be increased in certain pathologic conditions. The substances represented by this fraction of the secretion of the kidneys correspond to what modern terminology would designate as colloids. Since this newest feature of physical chemistry has come into conspicuous prominence in recent years and colloid chemistry has lately

2. "Nostrums and Quackery," pages 115 to 130; also in the pamphlet "Consumption Cure Fakes," price 10 cents.

3. For details send stamp for pamphlet "National League for Medical Freedom."

4. The Induction of Gastric Secretion, editorial, THE JOURNAL A. M. A., March 21, 1914, p. 934.

5. Cohnheim, O.: Ztschr. f. physiol. Chem., 1908, lviii; 1909, lxiii.

6. Sato, S.: Direkter Beweis, dass es nach Kochsalz- und Magnesiumsulfat-Infusionen in den Darm keine pathologische Veränderungen in der prozentualen Säurekonzentration des reinen Magensaftes im Sinne O. Cohnheim's gibt., Ztschr. f. physiol. Chem., 1914, xci, 1.

1. Educational Review, December, 1913, p. 516.

2. Proc. Ninth Annual Meeting of the North Central Association of Colleges and Secondary Schools, 1914, p. 43.

3. The Urine in Carcinoma, editorial, THE JOURNAL A. M. A., Aug. 15, 1914, p. 585.

4. Salkowski, E.: Berl. klin. Wchnschr., 1905, p. 1581.

gained a considerable vogue in biology and medicine, it is only natural that variations in the colloids of the urine should prove a popular topic for investigation whenever the application of a study thereof seemed likely to disclose something of a pathologic interest. The attempts to correlate apparently abnormal proportions of urinary colloids with specific diseased states have had their ups and downs in very recent times. Some investigators, in their enthusiasm for a new method of investigation, have overlooked the almost insuperable analytic difficulties attending a study of so indefinite a factor as urine colloid. It seems scarcely worth while to review the history of the subject further than to record the conclusion of the latest investigators in this field. Drs. de Bloeme, Swart and Terwen³ of the pathologic laboratory at the University of Amsterdam have been unable to discover any higher values for the colloidal nitrogenous products in the urine in carcinoma than in other diseases; in fact, there has been no uniformity of results such as would permit any rational interpretation for diagnostic purposes. There are certain features of the problem which may merit renewed investigation; but these latest reports support the contention of "not proven" and call for conservatism in the valuation of the claims of chemical indications of malignant disease.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Sanatorium Dedicated.—The Red Mountain Sanatorium of the Jefferson County Anti-tuberculosis Association was dedicated October 4.

Personal.—Drs. Walter S. Rountree, Wylam; Dyer F. Talley, Birmingham; John N. Furniss and James Kenan, Selma, have returned from abroad.—Dr. Arthur H. Montgomery, Montgomery, has been designated as physician for the federal prisoners in the Montgomery County Jail.—Dr. Milton C. Ragsdale, Jr., has been elected city physician for Bessemer.—Dr. Andrew M. Stovall, Jasper, was thrown from his buggy in a runaway accident recently, fracturing his right arm below the elbow.

Health Conditions in Alabama.—According to the monthly report, issued October 14, of Dr. Henry G. Perry of Montgomery, head of the state department of vital and mortuary statistics, twenty-one counties are infected with pellagra. There are thirty-six cases in one county alone. The Thompson-McFadden Commission, which is represented in Alabama by Dr. J. F. Siler of Birmingham, is investigating the condition. For the first time in several years the state is entirely free from cerebrospinal meningitis. There are mild cases of small-pox in Jefferson and Butler counties and cases of scarlet fever in Marengo and Lauderdale counties.

CONNECTICUT

Personal.—Dr. Michael J. Sheahan, Derby, sailed for Europe, October 17.—Drs. Clifton M. Cooley, Waterman Lyon and George H. Dalton have been appointed school inspectors of New Britain.—Dr. Albert C. Thomas, superintendent of the New Haven Hospital, has been appointed superintendent of the Massachusetts State Hospital, Foxboro.

3. De Bloeme, P. L. J.; Swart, S. P., and Terwen, A. J. L.: Der kolloidale Stickstoff des Harns und seine Bedeutung für die klinische Carcinomdiagnostik, Biochem. Ztschr., 1914, lxx, 345.

DELAWARE

State Society Officials.—In addition to the officers of the Delaware State Medical Society noted in THE JOURNAL of October 24, page 1487, Dr. Albert Robin, Wilmington, was elected alternate delegate to the American Medical Association and Drs. Peter W. Tomlinson, Wilmington; George W. Marshall, Milford, and James Beebe, Lewes, were elected councilors.

GEORGIA

Personal.—Drs. George R. White and Walter A. Norton, Savannah, have returned from abroad.—Dr. John S. McKenzie, Cordele, was thrown from his automobile recently, fracturing his right arm.

Medical Board Election.—At the meeting of the State Board of Medical Examiners in Atlanta, October 14, Dr. Nicholas Peterson, Tifton, was elected president, and Dr. Richard E. Hinman, Atlanta, vice-president, and Dr. Charles T. Nolan, Marietta, reelected secretary-treasurer.

ILLINOIS

Southern Illinois Physicians to Meet.—The fortieth annual meeting of the Southern Illinois Medical Association will be held in Mt. Vernon, November 5 and 6.

Personal.—Dr. James F. Dixon, West Salem, has been appointed resident physician of the St. Charles' School for Boys, succeeding Dr. Charles A. Potter.—Dr. Catherine B. Slater, Aurora, has returned from abroad.

Small-Pox, Scarlet Fever and Diphtheria.—Twenty-one cases of small-pox are reported from Neponset and its vicinity and twelve cases from Zion City. In the latter locality forcible resistance to vaccination by the city authorities is advocated by the head of the Dowieite community, on religious grounds. As strict a quarantine as possible has been established by the State Board of Health.—Fifty-three cases of scarlet fever were reported in Peoria up to the middle of October. Schools were closed in Delavan on account of scarlet fever during the week of October 17.—Cases of diphtheria are reported from Monticello.

Chicago

Clinics for Visiting Physicians.—At Wesley Hospital, clinics for visiting physicians will be conducted throughout the year by Dr. W. E. Schroeder. The work, which is surgical, will be given on Thursdays and Saturdays from 10 to 12 o'clock.

Tuberculosis Society Meeting.—The fourteenth meeting of the Robert Koch Society for the Study of Tuberculosis, affiliated with the Chicago Tuberculosis Institute, was held October 29, the general topic for the meeting being "Tuberculosis of the Larynx."

Mothers' Aid Pavilion Opened.—The Mothers' Aid Pavilion of the Chicago Lying-In Hospital, was formally opened October 31. A special reception to doctors and nurses was held on the previous day. The pavilion has been erected at a cost of \$85,000 and accommodates sixty patients.

Tuberculosis Conference.—The second general tuberculosis conference under the auspices of the Chicago Tuberculosis Institute will be held November 12 at the City Club, 315 Plymouth Court, following an informal dinner at 6 o'clock. The subject for discussion will be "The Cooperation of Public Health Nurses and Social Workers in the Early Detection and Control of Tuberculosis."

IOWA

Diphtheria.—Sixty-eight cases of diphtheria are reported from Cincinnati, Iowa, where all churches, stores and schools are closed and the town is quarantined. Cases are also reported from Tipton, Clarion and Davenport.

Hospital Addition Dedicated.—The addition to the Mercy Hospital, Des Moines, was dedicated with impressive ceremonies, October 8. During the exercise, announcement was made of the establishment of a hospital memorial consisting of an endowment of two wards to perpetuate the memory of the late Mr. and Mrs. Jefferson S. Polk.

Personal.—Dr. Arthur L. Washburn, formerly of Boston, has been appointed health commissioner of Oskaloosa, succeeding Dr. Herbert L. Eisler, resigned.—Dr. Frank W. Porterfield, Waterloo, has been appointed division surgeon of the Illinois Central System.—Dr. Thomas J. Burke and family, De Witt, have returned from abroad.—Dr. Arthur I. Ross, Perry, who has been ill in the King's Daughters'

Hospital for several weeks, is reported to be convalescent and has returned home.—Dr. Frank G. Murphy, Mason City, who has been ill in the hospital for eleven weeks, has recovered and resumed practice.

KANSAS

Personal.—Dr. Oscar M. Owensby, Pittsburg, has started for Europe in the Red Cross service.—Dr. John B. Dykes, Lebanon, has been nominated for congress on the Republican ticket.—Dr. Matthaus H. Horn, Morrowville, has returned from Europe.

Diphtheria Among "Holy Rollers."—Diphtheria, which is said to have been prevalent for two weeks in Gas City, is now considered under control. The epidemic is said to have originated among a sect known as the "Holy Rollers." Instead of calling a doctor, the members of the settlement went to the house of the patient and prayed over him. Dr. John S. Sutcliffe, health officer of Allen County, has ordered the religious organization to cease both private and public meetings until further order.

KENTUCKY

Kelly in Lexington.—Dr. Howard Kelly, Baltimore, visited Lexington, October 22, and delivered an address on "Social Hygiene."

Personal.—Dr. Charles H. Todd, Owensboro, is seriously ill at his home as the result of a cerebral hemorrhage.—Dr. John Todd has been reelected health officer of Newport.

The Horse-Meat Scandal.—The Louisville Health Department has been active in the last few weeks in an investigation and arrangement for the prosecution of certain butchers accused of selling horse-meat for beef. The publication of these reports has aroused all of the commercial organizations of the city, and efforts looking to a municipal abattoir have been inaugurated with every hope of success.

Public Health Work.—Drs. Joseph A. Stucky and Samuel B. Marks, Lexington; Dr. Louie E. V. Stegman, Battle Creek, Mich., and Dr. Isaac S. Manning, Manchester, together with trained nurses, visited Oneida recently, established a clinic at that place and opened the hospital which has just been completed. During this trip they examined the school-children of the county, and made investigations regarding trachoma and other infectious diseases.

Trachoma and Hookworm.—At the suggestion of Dr. Arthur T. McCormack, Bowling Green, secretary of the State Board of Health, the Fiscal Court of Jefferson County appropriated \$2,500 for fighting trachoma in the county and \$2,000 additional for a sanitary survey of the county.—Dr. Martin W. Steele, Bowling Green, state sanitary inspector, reports having closed a three weeks' health campaign in Owsley County during which about one-half the entire population was examined for hookworm, and 42 per cent. found infected. All received treatment. Dr. Steele attributes the success of the work very largely to the splendid professional spirit among local doctors. Dr. Steele opened an eight weeks' campaign in Pipe County, October 16, and expects to answer an urgent request from Lee County with two or three weeks' work there. Dr. Isaac A. Shirley of Winchester is carrying on similar work in Letcher County.

LOUISIANA

School Inspection Volunteers.—Twenty physicians connected with the School of Hygiene of the Tulane University, headed by Dr. William H. Seeman, have volunteered to assist Dr. Edmund Moss, medical inspector of public schools in New Orleans, in making a medical inspection of school children.

State Tuberculosis Home.—Dr. Oscar Dowling, president of the State Board of Health, went to Alexandria, October 17, to look over the proposed site for the State Tuberculosis Sanatorium. The state board announces that it has the prospect of a donation sufficient for the establishment of a laboratory for the production of diphtheria antitoxin and Dr. Dowling hopes that with this sum in his possession, he may be able to set aside a portion for the site of a tuberculosis hospital and serum farm and to produce there other serums for distribution to the poor of the State.

Personal.—Dr. Charles F. Gelbke, Gretna, has been appointed a member of the State Board of Health, vice Dr. Herman Oechsner, New Orleans, term expired.—Drs. Ludwig C. Heintz, Abita Springs; J. F. Buquoi and Henry E.

Gautreaux, have resigned as members of the Board of Health of Covington, it is said on account of the opposition displayed by a large proportion of the citizens to the enforcement of sanitary regulations, especially regarding out-houses.—Dr. Otto Joachim, New Orleans, who has been treating the wounded in the Military Hospital at Landau, Bavaria, has started for home.—Dr. Joseph A. Danna has been honored by the king of Italy with the title of Chevalier in acknowledgment of the service Dr. Danna has rendered the Italians of New Orleans.

MASSACHUSETTS

New Health Commissioner Begins Work November 1.—Surgeon Allan J. McLaughlin, U. S. P. H. S., the newly appointed health commissioner of Massachusetts, expects to assume the duties of his office November 1.

Personal.—Dr. Arthur J. White, executive assistant of the Boston City Hospital, has been appointed superintendent of the Consumptive Hospital to succeed Dr. Simon F. Cox, resigned.—Dr. William H. McBain, Malden, has been appointed associate medical examiner of Middlesex County.—Dr. Maurice L. Slutskin, Springfield, opened a new dispensary, October 13.

Parental School for Isolation Hospital.—The Boston City Hospital trustees have given up the plan for the erection of a new contagious disease building for which an appropriation of \$297,000 has been made and will utilize for this purpose several buildings connected with the parental school, at an expenditure of about \$150,000. The plans for the institution provide for the accommodation of 200 patients, each of whom will have a separate room in order to avert the possibility of cross infection.

MICHIGAN

Ottawa County Physician Honored.—A banquet was given in Grand Haven recently in honor of Dr. William DeKleine, who after eight years of residence in the county, has gone to Ann Arbor to take up post-graduate work in the medical department of the state university.

Personal.—Dr. Perly W. Pearsall, Kalkaska, has been appointed division surgeon of the Pere Marquette System and has been transferred to Muskegon.—Dr. Carl C. McClelland has been elected secretary of the medical staff of the Grace Hospital, Detroit, vice Dr. Leonard F. C. Wendt, resigned.

Baby Clinic Opened.—The Detroit Board of Health opened a free clinic at 508 Wesson Avenue for diseases of children and tuberculosis. This institution, together with the health sanatorium recently established on Dubois Street, is under the supervision of the health department nurses, with Dr. Victor C. Vaughan, Jr., Detroit, in charge of the tuberculosis division.

European Travelers.—Dr. Charles H. Baker, Bay City, Dr. Ignatz Mayer and Dr. and Mrs. Max Ballin, Detroit, have returned from abroad.—Dr. Cedric P. Sibley, Detroit, is doing work as a volunteer medical officer in a Vienna military hospital.—Dr. Edward H. Moriarity, Mount Clemens, has started for Ireland to join the medical corps of the Irish contingent of the British army.

MISSOURI

Health Conference Called.—A general conference on health measures has been called by the State Board of Health to convene at St. Joseph, November 27 and 28, to consider the advisability of permanent organization.

Personal.—Dr. Luther A. Todd has been appointed a member of the board of health of St. Joseph, vice Dr. Oliver C. Gebhart. At a meeting of the board of health October 13, Dr. Todd was elected president.—Dr. Hurel Perrie Hueyette, Kansas City, was shot and slightly injured by a patient from whom he was trying to collect a bill.—Dr. John Paul Owen, Kansas City, sailed for Europe October 15.

Children's Building for Mount Vernon.—At the annual meeting of the Missouri Association for the Relief and Control of Tuberculosis, the intention was announced to erect a children's building at the State Sanatorium, Mount Vernon, to cost \$50,000. The association elected a legislative committee consisting of Dr. William S. Allee, Olean; Dr. Frank G. Harris, Columbia, and Dr. James Stewart, St. Louis. This committee will draw up and have presented to the state legislature, bills to enable the association to carry out a state-wide work in the movement against tuberculosis.

St. Louis

Home from Europe.—Dr. Solomon A. Weintraub, Dr. and Mrs. Max A. Goldstein and Dr. James C. Whitley have returned from abroad.

Personal.—Dr. William Porter announces his removal this month from St. Louis to Ocean Springs, Miss. Dr. David R. Lamb will continue Dr. Porter's work in tuberculosis.—Dr. Joseph W. Charles, St. Louis, has been appointed a member of the board of managers for the Missouri School for the blind, succeeding the late Dr. M. Hayward Post.—Dr. David Schmalhorst suffered severe injuries in a collision between the motor car in which he was riding and a trolley car, October 14.

MINNESOTA

Sanatorium Site Decided.—Worthington has been decided on as the site for the new Southwest Minnesota Tuberculosis Sanatorium.

Personal.—Dr. Delbert F. Dumas has been appointed health officer of Cass Lake to succeed Dr. Roydon B. Yoder.—Dr. Thomas C. Clark, Stillwater, has taken up the duties of surgeon of the Soldiers' Home, Minnehaha.—Dr. Herbert G. Lampson, Rochester, has moved to Minneapolis, where he will do special work with the State Board of Health.

Medical Fellowships.—Three of the five teaching fellowships in medicine, established by the University of Minnesota, have been awarded. These are as follows: fellowship in diseases of the eye, ear, nose and throat, Dr. Henry E. Binger, Minneapolis; fellowship in surgery, Dr. Golder L. McWhorter, Algona, Ia., and fellowship in obstetrics, Dr. E. S. Moore, Washington, D. C.

NEVADA

State Society Meeting.—At the annual meeting of the Nevada State Medical Association held in Reno, October 13 to 15, the following officers were elected: president, Dr. Patrick J. Mangan, Winnemucca; vice-presidents, Drs. James C. Ferrell, Fallon, and Arthur J. Hood, Elko; secretary-treasurer, Dr. M. A. Robison, Reno (reelected); delegate to the American Medical Association, Dr. M. Rollin Walker, Reno; and alternate, Dr. Arthur P. Lewis, Reno. The next meeting will probably be held in Reno, a week before the American Medical Association meeting in San Francisco. The *California State Journal of Medicine* was decided on as the official organ of the Association.

NEW JERSEY

Entertains Medical Society.—Dr. Frank M. Donohue, New Brunswick, entertained the members of the Middlesex County Medical Society and guests, at his country home, Cedar Crest, October 7.

Hospital Cornerstone Laid.—The cornerstone of the medical building of the Mountinside Hospital, Montclair, was laid by Mrs. Franklin H. Hooper, president of the board of governors, October 10. The new building was made possible by a whirlwind campaign conducted one year ago in which \$230,000 was raised.

NEW YORK

Personal.—Dr. Barton McC. Cookingham, Red Hook, sailed for Europe October 17.—Dr. Joseph E. Clark, Yonkers, has been appointed by the State Commissioner of Health, sanitary supervisor of District E., which includes Oneida and Herkimer counties.—Dr. James S. Walton, Amsterdam, has been appointed sanitary supervisor of the district, including Montgomery, Fulton and Hamilton counties.

Buffalo "Better Mothers" Contest.—The city of Buffalo held a "Better Mothers" contest September 21 to 25, during which 540 entries were registered and 145 mothers, having received over 95 per cent. on the ratings of their babies, were awarded diplomas of efficient motherhood. The contest, which is said to have aroused interest in mothers of all classes, is intended to be the beginning of a continuous propaganda by which mothers will be encouraged to have their children thoroughly examined from time to time to discover any defects and to install measures for their correction.

Error in Using "Typhoid" for "Typhus."—Dr. Joseph J. O'Connell, Rosebank, health officer of the port of New York, calls attention to an error in the printing of a summary of the department's work in *THE JOURNAL*, October 17, p. 1402. *THE JOURNAL* stated that twenty cases of typhoid fever were removed from thirteen vessels with a record of eighteen

recoveries and two deaths. The report actually stated that twenty cases of typhus fever were removed from these thirteen vessels and that 2,633 typhus fever contacts were removed and treated so successfully that there were no secondary cases among them.

Harvey Society Lectures.—The tenth course of Harvey Society lectures was inaugurated October 10. The lectures are given on alternate Saturday evenings at the New York Academy of Medicine. The following is the schedule for the course: October 10.—Prof. Frederick P. Gay, University of California, "Experimental Studies on Methods of Anti-typhoid Immunization." October 24.—Prof. Thomas Lewis, University of London, "The Excitatory Process in the Heart." November 7.—Prof. Arthur S. Loevenhart, University of Wisconsin, "Certain Aspects of Vital Oxidation." November 28.—Prof. Lafayette B. Mendel, Yale University, "Nutrition and Growth." December 12.—Prof. Lawrence J. Henderson, Harvard University, "The Excretion of Acid in Health and Disease." January 16.—Dr. Edward R. Baldwin, Adirondack Cottage Sanitarium, "Immunity in Tuberculosis with Special Reference to Racial and Clinical Manifestations." January 30.—Prof. Hans Zinsser, Columbia University, "The More Recent Developments in the Study of Anaphylactic Phenomena." February 13.—Prof. John A. Fordyce, Columbia University, "Some Problems in the Pathology of Syphilis." February 27.—Prof. Robert R. Bensley, University of Chicago, "Structure and Relationships of the Islets of Langerhans and Criteria of Histological Control in Experiments on the Pancreas." March 13.—Prof. Elliott P. Joslin, Harvard University, "Carbohydrate Utilization in Diabetes Based upon Studies of the Respiration, Urine and Blood."

New York City

Dermatologic Clinics.—The New York Skin and Cancer Hospital announces the annual course of lectures by Dr. L. Duncan Bulkley. The lectures will be given Wednesday afternoons at 4 o'clock and will be preceded by a half-hour clinical demonstration of dermatologic cases.

Lectures for Health Department Employees.—The Bureau of Public Health Education of the Department of Health has organized a series of lectures which will constitute a sort of school of sanitary science for health department employees. The lectures will be held weekly at Hunter College and will continue through February, 1915. There are courses for physicians, for nurses, for hospital nurses and for field nurses, that is, for the nurses of the bureaus of infectious diseases and of child hygiene. Employees are expected to be prepared to pass an examination at the end of the course on the subjects presented.

An Experiment in Local Health Administration.—The *Weekly Bulletin* of the city department of health, October 10, reports the experimental establishment of a health district in the neighborhood of Gouverneur Hospital where the department intends to try out the experiment of local self-government in health matters. The new administrative feature consists of the government of the district from within the district itself instead of from the department headquarters and under the control of field workers in place of various bureau chiefs. The department does not commit itself to the wider adoption of the plan but wishes to study it in actual operation.

NORTH CAROLINA

County Hospital Nearly Ready.—Wake County Hospital, erected at a cost of \$75,000, is nearing completion and will be ready for occupancy early in January. The building is of fire-proof construction and is said to represent the last word in hospital construction.

Personal.—Dr. Charles F. Strosnider, Mount Olive, is taking postgraduate work in the East and expects to locate in Wilmington early in 1915.—Dr. Robert Vance Brawley, Salisbury, who has been taking postgraduate work in Baltimore, has returned and resumed practice.—Dr. John B. Wright, Lincolnton, has located in Raleigh where he has associated in practice with Drs. Richard H. Lewis and Kemp P. Battle, Jr.

OKLAHOMA

Society to Assume Charge of School Inspection.—At a meeting of the Washington County Medical Association held in Bartlesville, recently, the president of the Board of Education, made a formal request to the members of the Society to take charge of the examination of the pupils of the district and the Association agreed to perform the work.

Personal.—Dr. Edward S. Gooch, Lawton, has returned from a trip to Canada.—Dr. Robert T. Kelleam, Sallisaw, recently sustained slight injuries in a runaway accident.—Dr. Luther W. Troutt, Afton, fractured his forearm recently while cranking his automobile.—Dr. George S. Barger, Wayne, is preparing to return to his old home in Illinois.

State Health Board Exhibit.—The State Board of Health, which has been making an educational campaign throughout the state in the interest of good health, in the past year, brought its exhibit to the State Fair, Oklahoma City. The exhibit is in charge of Dr. John C. Mahr, Shawnee, state health commissioner, and Dr. Curtis R. Day, dean of the State Medical School and Dr. Richard T. Edwards of the faculty of that school.

Dr. Border Secures Conviction of Enemies.—On October 14, the jury in Judge Thacker's court at Mangum, in the case of a number of defendants who were charged with "conspiring to produce an abortion on a pregnant woman," returned a verdict of guilty as to each of them. The trial was the outgrowth of a scheme which, it is alleged, was concocted to ruin the mayor of Mangum, Dr. Fowler Border, in a political way. He became apprised of the scheme and was able to turn the tables. It is alleged that the Mangum Electric Company was behind the conspiracy because it was against the voting of bonds to build a municipal light plant which the mayor favored. The secretary of the company was among those convicted. The convicted persons endeavored to induce Dr. Border to perform an abortion on a pregnant woman.

PENNSYLVANIA

Typhoid at Lehigh Traced.—The investigation of the State Department of Health of the recent typhoid fever epidemic at Lehigh University where forty students were infected, has traced the source of infection to a kitchen employee who, though long since recovered from an attack of typhoid, still carried the germs.

Philadelphia

Personal.—Dr. J. William White, emeritus professor of surgery at the University of Pennsylvania, and Dr. R. Tait McKensie, head of the department of physical education, have volunteered their professional service to the British government.—Dr. Elwood R. Kirby has been appointed chief consulting surgeon of the Masonic Home at Elizabethtown, Pa.

Post-Graduate Clinics on the Heart and Lungs.—Beginning with the first Friday afternoon in November and continuing throughout the winter on Friday afternoons from 5 to 6 p. m., Dr. Robert N. Willson will give in the amphitheatre of the Philadelphia General Hospital, Pine and Thirty-Fourth streets, a series of demonstrations on the diseases of the heart and lungs. These clinics will be informal and a cordial invitation is extended to physicians, as well as to undergraduate medical students, to attend. The subjects under discussion during November will be the anatomy and physiology of the heart and vessels.

SOUTH CAROLINA

District Society Organized.—The Fifth District Medical Association, including the counties of Chester, York, Lancaster, Cherokee, Fairfield and Chesterfield, was organized at Chester, October 5, and the following officers were elected: president, Dr. Ebenezer W. Pressly, Clover; vice-presidents, Drs. Robert T. Ferguson, Gaffney; and Samuel Lindsay, Winnsboro; secretary-treasurer, Dr. George A. Hennies, Chester.

Adopts Model Law.—The State Board of Health at its meeting in Columbia, October 7, adopted the model vital statistics law, which was passed by the last general assembly and approved by the governor. The law is already in force in North Carolina and Virginia. Under the terms of the law, the state is divided into districts which are made up of cities, incorporated towns and townships.—Dr. James A. Hayne will be state registrar of vital statistics and will appoint local registrars who will be paid twenty-five cents for each death and birth reported to the state officials.

TENNESSEE

Wyeth in Chattanooga.—Under the auspices of the Chattanooga College of Medicine and Hamilton County Medical Society, Dr. John A. Wyeth, New York City, lectured in Chattanooga, October 2, on "The Great Republic."

Sanitary Inspection Service.—The State Board of Health reports that during the quarter ended September 30, over 13,000 microscopic examinations for hookworm were made in the state. In the counties of Grainger, Polk, Sevier, Sumner and Union 2,657 cases of hookworm received free treatment in dispensaries. During the current quarter there will be free dispensaries established in Bedford, Scott and Unicoi counties.

Personal.—Dr. Thomas C. Holloway, Memphis, who has been seriously ill with uremia, is reported to be improving.—Drs. Roy Granbery, Memphis, and Edwin W. Cocke, Whiteville, have been appointed assistant physicians to the Weston State Hospital, Bolivar.—Dr. Samuel E. Grout, physician to the Tennessee Coal, Iron and Railroad Company, at Bessemer, Ala., for several years, has resigned and will move to Dyersburg.

VIRGINIA

Health Department to Exhibit.—The Health Department of Richmond has decided to make an exhibit at the state fair. The exhibit includes graphic statements of the work accomplished by the department, the attitude of the department regarding small-pox and lessons in infant feeding.

Plan to Establish Temporary Trachoma Hospital.—Following the survey of Dickinson, Buchanan and nearby counties, which showed the prevalence of trachoma in the mountain sections, the State Board of Health and the United States Public Health Service have planned to cooperate to open a temporary hospital for the free treatment of trachoma, the United States government supplying surgeons, the State Board of Health to bear part of the expense and the building to be supplied by local authorities.

WEST VIRGINIA

Defer Work on Hospital Addition Till Spring.—The work on the new tuberculosis ward which is to be added to the State Penitentiary Hospital, Moundsville, and for which \$7,000 was appropriated, will not, it is announced, be commenced until spring.

Personal.—Dr. Andrew J. Noome, Wheeling, who was run down by an automobile October 10, is reported to be improving.—Dr. Ulysses M. Carwell, Hendricks, is reported to be ill at his home with tetanus due to an accidental gunshot wound of the ankle.

WISCONSIN

Deserved Honor to Dr. Sheldon.—The physicians of Wisconsin, on the last day of the state society meeting in October, made a formal presentation to Dr. Charles S. Sheldon, Madison, retiring president and for many years secretary of the society. The address was made by Dr. Gilbert E. Seaman, Milwaukee, who expressed the love and reverence in which Dr. Sheldon is held in the medical profession of the state.

Specialists Meet.—The first annual state meeting of the Wisconsin eye, ear, nose and throat specialists, was held at Atheron Hotel and St. Mary's Hospital, Oshkosh, October 8 and 9, under the auspices of the Milwaukee Oto-Ophthalmic Society. Forty-five members were present and the program consisted of a scientific program on the first day and a clinic and operations at St. Mary's Hospital on the second day.

CANADA

Hospital News.—The Sisters of St. Joseph at St. Thomas, Ontario, have purchased 5 acres of ground and the residence of Mr. John Farley, K. C., which will be remodeled into a hospital and sanitarium.

Personal.—Dr. Charles A. Hodgetts, Ottawa, medical advisor to the Canadian Conservation Commission, has been appointed commissioner for the Canadian Red Cross Society in Britain, to succeed the late Colonel Burland of Montreal.—Word has been received in Quebec that Hon. Dr. Beland, who was voluntarily attending Belgian wounded in hospital at Antwerp, is now in safety in Holland.

Famine in Labrador.—It is reported that on account of the short catch of cod during the season, the fishermen of Labrador are already suffering from lack of proper food. Beriberi has already appeared on the coast. Dr. John Mason Little, Jr., in charge of the Grenfell Hospital, St. Anthony, N. F., attributes the situation to the fact that the fishermen in every case eat little except white flour bread during the winter.

Children's Hospital, Toronto.—The Toronto Board of Health has recommended that the city of Toronto pay the Hospital for Sick Children 32 cents a day for all indigent outpatients treated at the hospital. The per capita cost of treating such patients in the past year has been to the hospital 42½ cents per day. During the past hospital year 31,970 patients received treatment at a cost of \$31,630.40; and the hospital authorities stated that unless the city undertook the major portion of this burden the trustees of the hospital would be compelled to discontinue the outpatient departments. The Ontario government has promised to make a grant of 10 cents per head for such patients. Last year the hospital had a deficiency of \$18,892.57. The new grant will cost the city about \$10,000 per annum.

Medical Inspection of Schools in Ontario.—The education department of the province of Ontario has issued in book form a new code of regulations for the medical inspection of schools. Provision is made whereby school boards may undertake free medical treatment of pupils whose parents are unable to pay; and school boards may appoint a school medical inspection committee representing one or several conjoint boards. This committee must appoint a qualified medical inspector of not less than two years' experience in his profession; and power is given with the consent of the minister of education and the provincial secretary for the Ontario Board of Health to name the municipal health officer as this medical officer for inspection. Nurses are also to be employed of one or more year's experience. Medical inspectors and nurses are to be subject to the ordinary school inspector or principal. This act makes medical inspection compulsory in rural school sections once every three months, in villages once a month, in towns once every two weeks, and in cities once a week. A complete physical examination must be made of every pupil as soon after admittance to school as possible. The school medical officer will also be required to confer with school boards on sanitary matters.

GENERAL

General Medical Directors Elect Officers.—At the annual meeting of the medical section of the American Life Convention, held in Dallas, Texas, October 7, the following officers were elected: chairman, Dr. Whitefield Harral, Dallas; vice-chairman, Dr. Frank W. Foxworthy, Indianapolis; secretary, Dr. Frank L. B. Jenney, Chicago (reelected), and member of the board of governors, Dr. J. P. Turner, Raleigh, N. C.

Railway Surgeons Elect Officers.—At the eleventh annual meeting of the American Association of Railway Surgeons held in Chicago, October 14 to 16, the following officers were elected: president, Dr. George F. Beasley, Lafayette, Ind.; vice-presidents, Drs. John P. Kaster, Topeka, Kan.; Clarence E. Case, Ashtabula, Ohio, and Eben N. Allen, Little Rock, Ark.; secretary and editor, Dr. Louis J. Mitchell, Chicago (reelected), and treasurer, Dr. Henry B. Jennings, Council Bluffs, Iowa. Safety first was the dominant note of the meeting.

Bequests and Donations.—The following bequests and donations have recently been reported:

Middlesex East District (Mass.), Medical Society, one fortieth of the residuary estate of Dr. John M. Harlow, Wilbur, amounting to about \$4,000, to be held in trust, invested and the net income used toward paying the expenses of the society including the annual dinner.

St. Vincent's Hospital, Sanatorium Gabriel, Seton Hospital and the Society for the Relief of Incurable Cancer, all of New York City, each \$5,000, by the will of Francis Higgins.

Presbyterian Hospital, for its Cathart Home for Incurables, Devon, Pa., \$6,000; Philadelphia Lying-in Hospital; and Philadelphia Home for Incurables, each one-ninth of the residuary estate of the late Francis T. Sully Darley.

To organize a corporation to maintain a hospital in Upland or Chester, \$200,000, to pay the income and maintain a bed in the Woman's Hospital, Philadelphia, \$5,000, and to maintain a bed in the Philadelphia Home for Incurables, \$5,000, by the will of Robert H. Crozer.

Goldsboro, N. C., Hospital, \$1,000, University of North Carolina, \$1,000, and Jewish Orphanage of North Carolina, \$2,500, by the will of Solomon Weill, Goldsboro, N. C.

Commemoration Day at San Francisco.—At the Atlantic City meeting the House of Delegates of the American Medical Association considered the recommendation of the Committee on Mode of Commemorating the Completion of the Panama Canal, to the effect that a day be set aside during the annual session at San Francisco next June to commemorate "the services of the men living or dead whose contributions to sanitary science and preventive medicine have made possible the construction of the Canal." The matter was referred to the Board of Trustees, which, at its meeting last

week, October 23, adopted a resolution setting aside Wednesday (June 23) of the week of the annual session in San Francisco, for this commemoration day, and appointed a committee to make the necessary arrangements. The following is the committee: Dr. W. T. Councilman, Chairman of the Board of Trustees; Dr. Victor C. Vaughan, President of the American Medical Association; Dr. William L. Rodman, President-Elect, and Dr. George H. Simmons.

WAR NOTES

Chloroform Donations.—A donation of \$4,000 worth of chloroform has been received by the British Red Cross from an American donor.

American Hospital in Petrograd.—The American colony in Petrograd has just established a small hospital there and the American Red Cross is arranging to send it absorbent cotton, linens, blankets, etc.

Dining Cars Placed at the Service of the Wounded.—The company owning the dining car service in Germany has placed all their cars at the service of the troops so that the wounded can be given warm food en route.

Motor Ambulances.—The British Red Cross Society has already been promised 200 motor cars to be used as ambulances. The Sydney branch of the society has sent a donation of \$25,000, of which \$5,000 is allotted for ambulances.

Cholera.—The Berlin exchanges of October 4 state that a single case of cholera has been discovered at Brunn, in a soldier returning from the seat of war in the northeast, and isolated at once. Two similar imported cases have been recognized and isolated at Vienna and one at Prague.

French Physicians at Erfurt.—Seven French physicians are said to be at work in the prisoners' camp at Erfurt, Germany, but in accordance with the Geneva convention, they are not regarded as prisoners of war but are lodged in the barracks and allowed to go about at will. They still wear their French uniforms with the Red Cross band on the arm.

Death of Professor König in the Field.—The *Med. Klinik* brings word that the professor of surgery at the university of Marburg, Friedrich König, was killed recently while attending to the wounded on one of the battlefields at the eastern seat of war. He was the son of the late Professor Franz König of Berlin, and entered on the practice of his profession in 1890.

No More Surgeons and Physicians Needed in the War Zone.—The First Aid Department of the American Red Cross announces that it has on file 2,000 applications from reputable American physicians and surgeons in the European war zone. These are far more than can be utilized at present. It is suggested, therefore, that no more applications be submitted at present.

The Iron Cross for German Members of the Profession.—The iron cross for special bravery under action has been conferred on Kraus, Martens, Jolly and Hübener, all of Berlin, Sauerbruch of Zurich, now consulting surgeon of the fifteenth army corps, Drigalski of Halle, Jüttner, Kirschner and Wachsen. The son of the latter is in the regular army and has likewise received the iron cross. Other recipients are: Guttman, Gralow, M. Mendelssohn, Vormann, Rhode and Langheld; the latter was in the campaign in China.

French Wounded.—In the *British Medical Journal* for October 17, there is reprinted a portion of a letter written by Dr. Alexis Carrel, from Lyons. Dr. Carrel states:

"I am in my own city. Mobilized, naturally. I am in the Hotel-Dieu in the Department of Surgery. I have more than a thousand wounded to look after. My patients are the first who came under fire. They are those who in Haute Alsace completed with the bayonet the work of the mitrailleuse. Fortunately the wounds are not very serious. In all, the wounded in Lyons are about 12,000, distributed among forty-two hospitals; in the district there are 25,000 more. Having regard to the tremendous number of combatants, the number of wounded up to the present is not, so far as our army is concerned, very heavy, and the mortality is very low. In my hospital of 2,000 men hardly 20 have died of their wounds. Besides, our wounded go back in great numbers to the front, and thus our army goes on acquiring as time goes on soldiers who know what taking cover under fire means."

Protest Against Repudiation of Scientific Honors.—The senior of the medical faculty of the University of Berlin, Professor Waldeyer, has published a protest against the action of Roentgen, Behring and other German scientists in repudiating honors that had been conferred on them by scientific societies in Great Britain. He deplors their carrying the war into fields whose cultivation requires the concerted action and tranquil cooperation of all civilized peoples. This

Deaths

John N. McCutchan, M.D. Louisville Medical College, 1896; a member and counselor of the State Medical Association of Texas; of Waco, Tex.; formerly president of the Central Texas District Medical Association and secretary of the Bell County Medical Society; health officer of Bell County and the city of Temple; assistant medical director of the Amicable Life Insurance Medical Association, Waco; died in the Providence Sanitarium in that city, October 9, from disease of the kidney for which an operation had been performed a week before, aged 41. At a meeting of the McLennan County Medical Society, October 10, resolutions of regret and sympathy were adopted.

John W. Morris, M.D. Albany (N. Y.) Medical College, 1881; attending consulting physician to the House of the Good Shepherd and physician to the Marshall Infirmary, Troy, N. Y.; for more than thirty years a practitioner of that city and once city physician and police surgeon; died at his home October 5, from angina pectoris, aged 55. At a special meeting of the Rensselaer County Medical Society, October 7, eulogistic addresses were delivered and resolutions of respect and regret were adopted.

Ernest J. Waddey, M.D. University of Maryland, Baltimore, 1891; of Waterloo, Ia., a Fellow of the American Medical Association; a charter member of the Waterloo Medical Society, and once president of the Black Hawk County Medical Society; district surgeon of the Illinois Central System and a member of the board of commissioners of insanity of Black Hawk County; died in St. Francis' Hospital, Waterloo, October 14, from organic nervous disease, aged 47.

William James Lumsden, M.D. University of Maryland, Baltimore, 1869; a Fellow of the American Medical Association; a Confederate veteran; formerly secretary of the Medical Association of the State of North Carolina; for more than forty years a practitioner of Elizabeth City, N. C.; one of the most beloved physicians of eastern North Carolina; died at his home, October 14, from cerebral hemorrhage, aged 68.

Leon Gay Lewis, M.D. Hahnemann Medical College, Chicago, 1910; of Milwaukee; formerly a member of the staff of the Ernest Wende Hospital, Buffalo, N. Y.; recently appointed a member of the house staff of the National Soldier's Home in Dayton, Ohio; died in Good Samaritan Hospital, Milwaukee, September 29, from typhoid fever, aged 27.

Charles S. Rudolph Reed, M.D. College of Physicians and Surgeons in the City of New York, 1879; of Utica, N. Y.; a specialist on diseases of the eye, ear, nose and throat; for twelve years consulting surgeon in his specialties in St. Elizabeth's Hospital, Utica; died in that institution, two days after a surgical operation, aged 62.

Arthur C. Magill, M.D. Michigan College of Medicine, Detroit, 1885; a member of the Medical Society of the State of Pennsylvania, and a practitioner of Pittsburgh, Pa.; once a member of the city council of Pittsburgh and board of trustees of the Carnegie Library; died in St. Francis' Hospital, Pittsburgh, October 17, aged 52.

James H. Walker, M.D. Iowa State University, Iowa City, 1898; a Fellow of the American Medical Association; once president of the Central District (Iowa) Medical Association and coroner of Boone County; one of the best known physicians of central Iowa; died at his home in Boone, September 25, from malignant disease, aged 44.

James S. Fuller, M.D. Kansas City (Mo.) Medical College, 1898; of Fort Gibson, Okla.; a member of the Oklahoma State Medical Association and a charter member of the Muskogee County Medical Society; died in Muskogee, August 30, from disease of the gall bladder and adnexa.

Veda C. Chipperfield Murphy, M.D. College of Physicians and Surgeons, Chicago, 1904; a Fellow of the American Medical Association and one of the most prominent woman physicians of Fulton County, Ill.; died at her home in Cuba, Ill., October 13, from carcinoma, aged 40.

Robert White, M.D. Durham (England) University, 1843; M.R.C.S., Eng., 1843; for forty-six years a practitioner of Boston; a member of the Massachusetts Medical Society; died at his home in Cambridge, Mass., September 27, aged 91.

H. C. Ferguson, M.D. Cincinnati College of Medicine and Surgery, 1876; a physician and pharmacist of Carter, Ky.; was found dead at the home of his son in Portsmouth, Ohio, October 6, aged 73.

Henry R. Stout, M.D. Hahnemann Medical College, Chicago, 1868; president of the Homeopathic Board of Medical Examiners of Florida; for forty-two years a practitioner of Jacksonville, Fla.; died at the home of his daughter in St. Augustine, Fla., October 14, aged 71.

John C. Amis, M.D. University of Louisville, Ky., 1883; a Fellow of the American Medical Association; attending physician to the Bell Point Hospital and physician-in-chief to the Fort Smith Orphan's Home; died at his home in Fort Smith, Ark., October 14, aged 54.

William B. Walker, M.D. Cincinnati College of Medicine and Surgery, 1876; a member of the Medical Society of the State of Pennsylvania and formerly vice-president of the Indiana County Medical Society; died at his home in Dayton, Pa., September 19, aged 63.

Richard Lee Smith, M.D. Beaumont Hospital Medical College, St. Louis, 1896; formerly mayor of Washougal, Wash.; died in his office in that place, September 12, from the effects of a gunshot wound of the head self-inflicted, it is believed with suicidal intent, aged 50.

Linwood Shangar Corson, M.D. Temple University, Philadelphia, 1907; chief of the Medical Dispensary of the Garrettsen Hospital; a practitioner of Glenmoore, Pa.; died in the Samaritan Hospital, Philadelphia, September 26, from heart disease, aged 41.

Joseph Edward Beatty, M.D. University of Maryland, Baltimore, 1861; for forty years a practitioner of Baltimore; surgeon major of the Second Maryland Volunteer Infantry during the Civil War; died in a sanatorium near Baltimore, October 13, aged 75.

Christopher S. Newbill, M.D. College of Physicians and Surgeons, Baltimore, Md., 1875; for many years health officer of Norfolk, Va.; died suddenly September 26, from cerebral hemorrhage, while driving near his home in Tappahannock, Va., aged 63.

Nicholas Z. Wagener, M.D. Northwestern University Medical School, 1904; a member of the Wisconsin State Medical Society; of Sturgeon Bay, Wis.; died in a hospital in that city, October 3, a week after an operation for appendicitis, aged 41.

William R. Hamilton, M.D. New York University, New York City, 1864; a member of the Medical Society of the State of Pennsylvania, and one of the oldest practitioners of Pittsburgh; died at his home October 15, from senile debility, aged 86.

Josiah T. Payne, M.D. University of Maryland, Baltimore, 1868; a Confederate veteran and health officer of the Tenth District of Baltimore County, Md.; died at his home in Sunny Brook, Md., October 2, from cerebral hemorrhage, aged 75.

Collier D. East, M.D. College of Physicians and Surgeons, Baltimore, Md., 1876; a member of the South Carolina Medical Association, of Goldville, S. C.; died at the home of his sister in Clinton, S. C., September 20, from heart disease, aged 62.

James Bachelder Bell, M.D. Homeopathic Medical College of Pennsylvania, Philadelphia, 1869; for nearly thirty years a member of the staff of the Massachusetts Homeopathic Hospital; died at his home in Boston, September 27, aged 76.

Harry C. Wakefield, M.D. Beaumont Hospital Medical College, St. Louis, 1892; acting assistant surgeon, U. S. P. H. S., and on duty at the St. Louis Marine Hospital since 1895; died in that institution, October 6, from appendicitis, aged 44.

John Francis Dustin, M.D. National Medical University, Chicago, 1902; of Deadwood, S. Dak.; aged 54; died in St. Joseph's Hospital in that city, September 27, from injuries received sixteen hours before, by the overturning of his automobile.

Benjamin F. Wyman, M.D. Medical College of the State of South Carolina, Charleston, 1869; a practitioner of Aiken; died at the home of his granddaughter in Kitchings Mills, S. C.; September 30, from pneumonia, aged 75.

Charles M. Van Dyke, M.D. Starling Medical College, Columbus, Ohio, 1886; a member of the Medical Society of the State of New York; health officer for Milo; died at his home in Himrod, N. Y., September 29, aged 57.

Nathaniel G. Morris, M.D. University of Nashville, Tenn., 1873; a member of the Kentucky State Medical Association; of Fulton, Ky.; died suddenly at his farm near that place, September 25, from heart disease, aged 63.

Elijah Leonard Bruen, M.D. Long Island College Hospital, Brooklyn, 1899; a member of the medical staff of the Women's Hospital in the State of New York and the New York Polyclinic; died at his home in Brooklyn, October 3.

Gustav Burton Turner, M.D. Northwestern University, Chicago, 1912; assistant surgeon of the Western Pacific Railroad at San Francisco; died in Mount Sinai Hospital in that city, September 19, from diabetes, aged 27.

Henry S. Baron, M.D. Physio-Medical College of Indiana, Indianapolis, 1878; a Fellow of the American Medical Association; died at his home in Pella, Iowa, September 20, from carcinoma of the intestines, aged 62.

Max H. Hartwig, M.D. Detroit College of Medicine and Surgery, 1888; of Port Washington, Wis.; was instantly killed by the overturning of his automobile, 4 miles west of Port Washington, September 16, aged 49.

Andrew A. Forsythe, M.D. Tulane University, New Orleans, 1887; for nearly sixteen years mayor of Monroe, La.; died at his home in that city, September 29, from chronic interstitial nephritis, aged 52.

Carl Kaufman, M.D. University of Heidelberg, Germany, 1868; for several terms coroner of Sargent County, N. Dak.; died at his home in Gascogne, N. Dak., about September 28, from cirrhosis of the liver, aged 70.

Aaron Robert Wolfe, M.D. New York University, New York City, 1882; of Paterson, N. J.; was thrown from his automobile September 26, by the simultaneous bursting of two tires, and instantly killed, aged 55.

James Singleton Shoemaker, M.D. Hahnemann Medical College, Philadelphia, 1888; a member of the teaching staff of his Alma Mater; died at his home in Philadelphia, October 7, from nephritis, aged 50.

Abner McLean, M.D. Medical College of the State of South Carolina, Charleston, 1861; surgeon in the Confederate service throughout the Civil War; died at his home in Dillon, S. C., October 1, aged 80.

Alfred J. Perkins, M.D. Eclectic Medical Institute, Cincinnati, 1865; at one time president of the Florida State Eclectic Medical Association; died at his home in Daytona, Fla., October 10, aged 80.

James A. Toole, M.D. Savannah, Georgia, Medical College, 1869; surgeon in the Confederate service during the Civil War; died at his home in Glenwood, near McRae, Ga., September 21, aged 73.

James W. Fergus, M.D. Memphis Hospital Medical College, Memphis, Tenn., 1891; a member of the Arkansas Medical Society; died at his home in Elm Springs, Ark., about September 17, aged 62.

Cassius Marcellus Smick, M.D. Miami Medical College, Cincinnati, 1881; a member of the medical staff of St. Luke's Hospital, Terre Haute, Ind.; died at his home in that city, September 12, aged 61.

Simon P. Lester, M.D. Jefferson Medical College, 1852; for more than sixty years a practitioner of Mississippi; died at his home in Batesville, September 28, from carcinoma of the stomach, aged 87.

Joseph Glass Wilson, M.D. College of Physicians and Surgeons, Keokuk, Ia., 1873; formerly of Attica, Kan.; died at his home in Portland, Ore., August 26, from valvular heart disease, aged 72.

Hugh Lagan, M.D. University of California, San Francisco, 1893; once surgeon of the San Francisco Fire Department; died at his home in San Francisco, October 13, from tuberculosis, aged 43.

Alonzo M. W. Westfall (license, years of practice, Illinois, 1877) a practitioner of Prairie City, Ill., for forty-four years; died at his home September 21, from acute dilatation of the heart, aged 70.

J. P. Swentzel (license, years of practice, West Virginia, 1881); for fifty-three years a practitioner of medicine; died at his home in Arnoldsburg, W. Va., early in August, aged 80.

Louise Dodson Holmes, M.D. Women's Medical College, of Cincinnati, Ohio, 1895; a member of the Massachusetts Medical Society; died at her home in Athol, Mass., recently, aged 46.

Horace K. Regar, M.D. University of Pennsylvania, Philadelphia, 1878; a Fellow of the American Medical Association; died at his home in Philadelphia, September 14, aged 59.

Andrew B. Brookins, M.D. University of Louisville, Ky., 1875; of Bartow, Fla.; formerly chief surgeon of the Hospital for Inebriates; died in Jacksonville, Fla., September 21, aged 81.

Isaac Newton Willard, M.D. Bellevue Hospital Medical College, New York City, 1875; of Utica, N. Y.; died suddenly in Syracuse, N. Y., September 25, from angina pectoris, aged 65.

Harriet E. Turner, M.D. Medical College of Indiana, Indianapolis, 1896; a Fellow of the American Medical Association; of Indianapolis; died in Boston, Mass., September 29, aged 49.

John Whiting Niles, M.D. New York University, New York City, 1876; for many years a practitioner of Chicago; died at his home in that city, October 17, from cerebral hemorrhage, aged 62.

Claudius H. Morris, M.D. Medical College of Indiana, Indianapolis, 1881; for twenty-five years a practitioner of Galveston, Tex.; died in San Antonio, Tex., October 7, aged 61.

Jedediah Marcus Barton, M.D. Hahnemann Medical College, Philadelphia, 1870; died at his home in Worcester, Mass., September 30, from cerebral hemorrhage, aged 69.

William E. Henderson, M.D. University of Louisville, Ky., 1873; a member of the Oklahoma State Medical Association; died at his home in Shawnee, Okla., October 11, aged 64.

John W. Layfield, M.D. University of the South, Sewanee, Tenn., 1899; for several years a practitioner of Alma, Ga.; died at a hospital in Savannah, Ga., October 3, aged 40.

Harry Murray Jones, M.D. University of North Carolina, Chapel Hill and Raleigh, 1906; died at his home in Nez Perce, Idaho, October 5, from pneumonia, aged 33.

Samuel Hamilton Vredenburg (license, years of practice, Illinois, 1878) for nearly sixty years a practitioner of Danville, Ill.; died at his home, September 24, aged 94.

Jesse Portman Chesley, M.D. Washington University, St. Louis, 1864; of St. Joseph, Mo.; died at the home of his daughter in Kansas City, Mo., October 10, aged 81.

William Henry Davies, M.D. University of Edinburgh, Scotland, 1857; of Monterey, Cal.; died in San Francisco, September 30, from senile debility, aged 80.

Abram L. Small, M.D. Rush Medical College, 1863; a pioneer practitioner of Kankakee County, Ill.; died at his home in Kankakee, October 6, aged 84.

Herbert E. Bennett, M.D. Starling Medical College, Columbus, Ohio, 1879; died at his home in Mentone, Ind., September 28, from heart disease, aged 50.

David T. Hyatt, M.D. Louisville Medical College, 1874; a practitioner and druggist of Monticello, Ark.; died at his home recently, aged 62.

Honore P. Guilbeau, M.D. University of Pennsylvania, Philadelphia, 1853; died at his home in Breau Bridge, La., September 27, aged 82.

Frank A. Hemenway (license, Iowa, practitioner, 1886); died at his home in Clio, Iowa, September 19, from disease of the lungs, aged 68.

John A. Hamilton (license, Ind., 1897); for thirty-five years a practitioner of Advance, Ind.; died at his home September 28, aged 78.

Harry David Belt, M.D. Medical College of Ohio, Cincinnati, 1867; died in Chicago, September 30, from cerebrospinal meningitis, aged 40.

David Lewis Taylor, M.D. Albany, N. Y. Medical College, 1892; of New York City; died in Gilbertsville, N. Y., July 11, aged 46.

Lafayette J. Poe, M.D. Eclectic Medical Institute, Cincinnati, 1876; died at his home in Butler, Ky., September 18, aged 67.

James Neil, M.D. New York University, New York City, 1850; died at his home in New York City, September 26, aged 86.

Josephine Alice Line, M.D. Rush Medical College, 1903; of Hiram, Ohio; died suddenly in Troy, Ohio, August 17, aged 37.

Alonzo G. Cook, M.D. Hahnemann Medical College, Chicago, 1881; died at his home in Long Beach, Cal., August 15, aged 75.

John L. Phillips (license, Ind., 1897); of Linton, Ind.; died in Ann Arbor, Mich., August 30, from gastritis, aged 74.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

THE "BIG SIX"

Six Reasons for the Perpetuation of the Proprietary Evil

"The Big Six" is the modest name assumed by the Associated Medical Publishers in describing the half-dozen medical journals that comprise their association. The Associated Medical Publishers is an organization evidently composed of the owners and publishers of the following journals:

American Journal of Clinical Medicine, Chicago: Essentially a house organ for the Abbott Alkaloidal Company. Was established in 1894, its original name being the *Alkaloidal Clinic*.

American Journal of Surgery, New York: Originally established in St. Louis, but when purchased by its present owner, was transferred to New York City. Its owner and managing editor was, previous to the time he purchased the *American Journal of Surgery*, advertising manager for another surgical journal. He still is, essentially, an advertising man, and is said to act as advertising director of a Massachusetts proprietary house.

American Medicine, Burlington, Vt.: Originally established as a weekly in Philadelphia. When purchased by its present owner, it was changed to a monthly, and the place of publication transferred to Burlington, Vt., although its principal offices are in New York City. Its present owner and managing editor conducts an advertising agency that handles a number of proprietary medicine accounts.

Interstate Medical Journal, St. Louis: Practically owned and controlled by a physician who conducts an advertising agency which handles, or has handled, a number of advertising accounts of proprietaries.

Medical Council, Philadelphia: Was established in 1895 and is at present owned and controlled by the widow of its founder.

Therapeutic Gazette, Detroit: Essentially a house organ for Parke, Davis & Company and is published by the general manager of this company.

The Associated Medical Publishers under the caption "Big Six" published the following advertisement early this year:

"A banner year is ahead for those firms who plan to develop the patronage and support of the medical profession for their products. Never were the opportunities greater, or the prospects brighter, for enlisting the aid of medical men in the successful merchandising of pure foods, sanitary supplies for the home, school or public institution, hygienic clothing and foot wear, automobiles and automobile accessories, and high grade specialties in general appealing to the physician personally, or in his professional capacity.

"Through the services of 'The Big Six' reputable firms can secure for products of established merit, the favorable attention of over 100,000 of the country's foremost physicians.

"Certainly no other way of reaching the physician is so effective and economical as the use of advertising space in these recognized high-class journals. Owing to their standing and the fact that medical men preserve them indefinitely for repeated reference, they give a sustained service that is possible by no other class of publications.

"If you have something of real merit to introduce to American doctors, do not fail to investigate 'The Big Six.' It has paid others and paid them well, it will pay you."

An advertisement for the *Interstate Medical Journal* says in part:

"Here is a journal for the busy, thinking men of the profession who demand authoritative and timely journalistic service."

And the publishers of the *American Journal of Clinical Medicine*:

"*Clinical Medicine* is the great therapeutic journal. It is not intended for specialists and theorists. It is intended for general practitioners. Every number, every page, every line is selected with that point in view, to give you all the help we possible can. You need it, let us show you why."

The owners of the *Therapeutic Gazette* tell the medical profession that they regard each subscription as a contract with the physician to furnish him monthly with 76 pages of the most reliable information that can possibly be collected on the subject of therapeutics.

"Guarding your rights along these lines as carefully as we do, we beg of you to read the announcements of our advertisers, and favor them with inquiries and requests for samples; and when so doing, please be so kind as to mention having seen the advertisement in the *Therapeutic Gazette*."

Of the *Medical Council*, we learn that:

"Its pages are filled with scientific material of that brief concise, practical character so easily assimilated and so very helpful in the physician's every day work. Especial attention is devoted to the business side of the physician's life. To the busiest, most prosperous physicians *Medical Council* has become indispensable. . . . No journal in America is more conscientious concerning the character of its advertising pages than *Medical Council*."

SOME NOSTRUMS ADVERTISED IN THE "BIG SIX"

NOSTRUMS	<i>Therapeutic Gazette</i>	<i>American Medicine</i>	<i>American Journal of Clinical Medicine</i>	<i>Interstate Medical Journal</i>	<i>Medical Council</i>	<i>American Journal of Surgery</i>
Aletris Cordial		+		+	+	+
Anasarcin	+	+	+	+	+	+
Angier's Petroleum Emulsion		+	+	+	+	+
Antiphlogistine	+	+		+	+	+
Betul-Ol	+	+				+
Bromidia	+		+			
Burnham's Soluble Iodine		+	+		+	+
Cactina Pillets	+	+		+	+	+
Campho-Phenique	+	+		+	+	+
Celerina		+		+	+	+
Chionia	+	+		+	+	+
Citrolax	+	+	+		+	+
Colchi-Sal	+	+				+
Crotalin			+	+		
Cystogen Aperient	+	+		+	+	+
Dermatone	+		+			
Dioburnia					+	
Ergoapiol	+	+	+	+	+	+
Fellows' Syrup of the Hypophosphites	+	+	+	+	+	+
Formamint		+				+
Gastrogen Tablets	+	+		+		
Glyco-Heroin	+	+	+	+	+	+
Glyco-Thymoline	+	+	+	+	+	+
Gray's Glycerine Tonic	+	+	+	+	+	+
H-M-C (Abbott)	+	+	+	+	+	+
Hayden's Viburnum Compound	+	+	+	+	+	+
Micajah's Wafers	+		+	+	+	+
Neurosine	+		+	+		
Noitol			+	+	+	
Palpebrine			+		+	
Papine	+		+			
Pasadyne	+					
Peacock's Bromides	+	+		+	+	+
Pepto-Mangan (Gude)	+	+	+	+	+	+
Phenalgin	+	+		+	+	+
Protonuclein and Protonuclein Beta				+	+	+
Prunoids	+	+		+	+	+
Resinol	+			+	+	+
Respirazone					+	
Sanmetto		+			+	
Secretogen					+	
Sedobrol Roche	+		+	+	+	+
Seng	+	+		+		
Three Chlorides (Henry)		+		+		+
Tri-Iodides (Henry)		+		+		+
Trophonine			+	+	+	+
Unguentine						+

In fairness to the *Medical Council* it should be said that this publication has, during the past six or eight months, purged its advertising pages of many of the more objectionable products. It is understood that further deletions are under consideration.

How careful the owners and editors of the "Big Six" journals are to present authoritative information in their advertising pages is evidenced by the accompanying list showing some of the medicinal articles advertised in recent, 1914, numbers of these six ostensibly high-principled medical journals. Many of the articles included in this list can safely be classed with the more obnoxious nostrums of the "patent

medicine" type and like the latter class are, in many instances, simple frauds, the sale of which should not be tolerated.

How closely the method of advertising these several preparations simulates that adopted by the manufacturers of "patent medicines" is evidenced by the fact that within the past year the assertions made in many of the advertisements have materially changed and the statement that the preparation is "an efficient remedy" in place of "a positive cure" is now generally used. To be somewhat more impressive the manufacturers frequently utilize the assertion that their preparation "seems to exert an almost specific effect" or the equally misleading statement, "no remedy at the command of the profession is more valuable than" the preparation under discussion. Not infrequently the advertiser also adds the additional promise that his preparation "will not disappoint you."

A careful study of the accompanying list ought to convince the thoughtful practitioner that many if not all of the nostrums advertised in these several journals are fully as objectionable as those advertised in the daily press and will further convey the rather sorrowful conviction that until a distinct majority of the "100,000 of the country's foremost physicians," who are said to be subscribers to these journals, will devote themselves to the best that is in their profession, we have little or no right to expect that the public at large will believe us to be less gullible than the most unsophisticated layman or that our opinion regarding any one nostrum is not influenced by our interest, direct or indirect, in one or more of the other secret or semi-secret preparations that are equally bad.

WHAT ONE PAPER THINKS OF THE "ASSOCIATED DOCTORS"

There is published in York, Neb., a "live" newspaper, the *New Teller*. We have referred to this paper before¹ and to the open letter it published declining an advertisement offered by a Kansas City quack. The *New Teller* of Oct. 14, 1914, publishes another open letter, this time to an advertising agency. The agency wrote to the York paper stating that it had recently sent the *New Teller* an advertisement of the "Associated Doctors" but had failed to receive marked copies of those issues of the paper that should have contained these advertisements. It asked that the *New Teller* please forward the issues containing the advertisements or state why it was not publishing them. The editor's reply begins:

"Dear Dakota Advertising Agency:—We have been answering inquiries similar to yours, from various parts of the country, with an admirable patience for several years past. In this instance we have decided to come back with a few inquiries of our own.

"Who are the Associated Doctors? Are they associated with anybody but each other? . . . Are they associated with any reputable medical institution anywhere, or endorsed by any resident physician of standing that you know of? Do you believe they are really capable of performing miraculous cures, or that they would have time enough to travel around the country if they could accomplish such cures? Wouldn't patients be flocking to them by the tens of thousands within a week after the first half dozen such cures?"

Then, after asking the advertising agency whether it would still handle the "Associated Doctors" advertising if it knew these "doctors" were fakes, the *New Teller* says:

"Here in this little town of York, a new \$50,000 hospital is to be completed within the next few months. If the 'Associated Doctors,' with whom you appear to be associated can make good on only a small part of the promises you expect us to make for them, they needn't suffer all the inconveniences of constant traveling—of stopping at country hotels—of riding jerkwater trains—a moment longer. We'll make them the staff of our new hospital by unanimous consent, and they'll make York the most famous town in the world within thirty days after they take the job."

Then the editor relates an instance that had come to his notice of a "poor devil not living far from York" who was "afflicted with a disease pronounced incurable, in his case, by some of the most notable specialists in the country." The

hopeless sufferer fell into the hands of quacks who "fed him a little dope" and, after getting his confidence, "promised to complete the cure for what, to him, was a tremendously large sum of money." The poor fellow raised the money, though he had to mortgage his team of horses to do it—and then the inevitable happened. The editor continues:

"A doctor who is not competent, or who is unreliable and dishonest can't stay in one town very long. If the Associated Doctors are what they pretend to be, they can stay in York as long as they like.

"Anyway, dear Dakota Advertising Agency, this newspaper never has and never knowingly will endorse these fly-by-night specialists such as the United Doctors, Associated Doctors, or any Hoboe Doctors, by printing their promises for them. We believe such promises are lies, and we don't care to go into business with the people who tell them. Furthermore, dear Dakota Advertising Agency, any advertising matter of any nature we publish for you in the future will be paid for in advance. We must make this request because of the company you keep.

"We hope to see the time when the laws not only of Nebraska, but of the United States will not allow this sort of temptation to be placed in the way of advertising agencies and newspaper owners."

He closes by saying:

"The grafter who used to work the shell game in the sideshow tent was cherubim and scraphim compared to the present day fake doctor, for he dealt with men who had ready money jingling in their jeans and who were enjoying life; while the victims of the fake doctor are quite generally from the poorer class and who are plunged in the depths of misery and despair.

"So there, dear Dakota Advertising Agency, are a few of the reasons why you will not receive marked copies of Sept. 30 and Oct. 7, containing the ad. of the Associated Doctors. We await your answer to our inquiries with well-controlled curiosity."

DR. A. R. LAW

He Asks Wisconsin Druggists to Become Quacks

A Wisconsin druggist sends us a circular letter sent to him from Madison, Wis., dated "October, 1914," and signed "A. R. Law, M.D." Our correspondent says that the druggists of his state are receiving copies of this letter, and he asks for information regarding Dr. Law's professional standing as well as an opinion on Law's method of procedure. The circular letter reads:

Dear Sir:—Do you know of someone who is suffering from rheumatism, erysipelas, or sexual impotence?

Listen!

I can place in your hands a remedy for each of these diseases that will effect an absolute cure. I guarantee it.

With a large medical practice of over thirty years, I have had a splendid opportunity to study these diseases. I have specialized in them and the remedies I now offer you are the results of years of patient study and experimenting. I have used them in my regular practice and certain and positive cures have invariably resulted.

These remedies are placed through druggists only. I do not advertise them as to do so would at once place me in a class with the many quacks and "so-called" doctors now imposing on the public.

My prices are—for rheumatism, \$10.00; for erysipelas, \$25.00; for sexual impotence—men \$10.00; women \$5.00. All preparations sent free of expense to you to be paid for when disposed of less a commission of 20 per cent.

Every druggist is, in a measure, the neighborhood doctor and will find my remedies of immense value to him. I want YOU to try them.

Select someone you know and on whom you can rely and let him try one of my preparations. I will send it to you; the patient to pay for it, give it a fair trial, and if it fails to cure or he is not benefited more than the price of the medicine, refund his money. If satisfied remit to me less your commission of 20 per cent.

References as to professional and social standing gladly furnished and all questions and correspondence answered immediately.

Sincerely yours,

A. R. LAW, M.D.

According to our records, in July, 1911, Dr. A. R. Law of Madison, Wis., was arrested on the charge of performing an illegal operation on a woman resulting in the death of the patient. In September, 1912, he was found guilty and sentenced to six years imprisonment in the Wisconsin State Penitentiary at Waupun. In March, 1914, Law's sentence was commuted from six years to three years. This made him eligible to parole, and in the latter part of May of this year Law was paroled. At the time he was sentenced to prison, Law's license was revoked and, according to the secretary of the State Board of Medical Examiners for Wisconsin, this license has never been restored. Law's present activities indicate that official clemency was misplaced.

1. "The Itinerant Quack," THE JOURNAL, Sept. 6, 1913.

Correspondence

Sterilization of Apparatus for Anesthesia

To the Editor:—The statement by Dr. A. H. Miller in THE JOURNAL, Oct. 24, 1914, p. 1474, that "no apparatus [for administering nitrous oxid-oxygen] previously described can be readily sterilized and in most, sterilization would be impossible without destroying the instrument," is so far from being correct that I cannot allow this sweeping statement to pass unnoted. Many, if not indeed quite all, of the different apparatus that have been described from time to time in THE JOURNAL, and in surgical literature in general, may be readily sterilized. In fact, if this were not the case it would be a sad comment on anesthetic technic. A distinction should be made between advertisements and literature.

R. C. COBURN, M.D., New York.

Absence of Bony Pressure on Nervous Structures in Man

To the Editor:—My book, "The Intervertebral Foramen," was reviewed in THE JOURNAL, April 25, 1914, p. 1353. In this work I attempted to give an exhaustive description of the normal histology of an intervertebral foramen and its adjacent parts. The foramen described and photomicrographs shown were from the cat, as was stated in the text.

I have been in receipt of many letters and inquiries asking if these findings could be relied on to be identical with those of man. In order to answer this question scientifically I undertook a microscopic study of several different foramina and adjacent parts in man. These investigations corroborate those described in the original work. While no two intervertebral foramina have been found identical, they all appear to have a general structure very similar to the one described. However, the nervous structures in man, as a rule, occupy a smaller area of the foramina than was the case of the one shown of the cat. Therefore it would appear that they are even *better* protected from bony pressure than was the one from the cat.

HAROLD SWANBERG, Chicago.

[COMMENT.—This scientific study shows on what a slender foundation are built up such cults as chiropractic, etc.—ED.]

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted on request.

KARELL TREATMENT — BARIUM SULPHID AND BARIUM SULPHYDRATE

To the Editor:—I shall consider it a great favor if you will kindly enlighten me through THE JOURNAL, of which I am a recipient, on the following questions:

1. Of what does the Karell course of dieting consist and where can I find any literature on the subject?
2. Barium sulphuratum splendidly removes the hair from the skin, but the odor of this chemical is bad. The after-effects are also terrible in so far that the skin becomes very irritated, inflamed and smarts. How can we improve on the odor and prevent the irritation?

We are on the eve of a great international catastrophe but I do not see why the scientific mind should be influenced thereby. There ought to be more science and less armaments!

D. A. R., St. Petersburg, Russia.

ANSWER.—1. The Karell treatment consists of rest in bed and a light diet of milk and eggs. The fluid is limited to 1½ pints per day. At first this is given, for two or three days, as milk only, 6 to 7 ounces at 8 a. m., and 4 and 8 p. m. This is the most trying part of the method. Then 1 egg is given at 10 a. m. and a biscuit at 6 p. m. for a couple of days. Then 2 eggs with bread, and a little minced meat are allowed. In twelve days the patient returns to a careful ordinary diet, the fluid being still kept down to 1½ pints but not necessarily milk only. This method is said to be indicated for weak hearts for which digitalis is less appro-

priate. About the third day diuresis sets in for a short time, the dyspnea is relieved, the pulse improves, and the edema subsides.

The following may be referred to:

- Strauss, H.: The Karell Milk Cure in Obesity, Med. Klin., March 27, 1910; abstr., THE JOURNAL, May 7, 1910, p. 1585.
His, W.: The Karell Milk Diet in Heart Disease, Therap. Monatsh., January, 1912; abstr., THE JOURNAL, Feb. 17, 1912, p. 524.
Wittich: Karell's Method of Treating Cardiovascular Disturbance, Deutsch. Arch. f. klin. Med., 1913, cx; abstr., THE JOURNAL, May 30, 1913, p. 1501.
Armbrust, G.: Karell's Milk Cure in Asystole, Brazil-med., Dec. 8, 1913.
Kimmerle, A.: Treatment of Obesity, Therap. d. Gegenw., October, 1913; abstr., THE JOURNAL, Nov. 15, 1913, p. 1854.

2. Barium sulphuratum or barium sulphid may occur in two forms: (a) the barium sulphid which is a powder having only a very slight, not disagreeable odor of sulphur, and (b) barium sulphhydrate containing barium sulphid in combination with hydrogen sulphid which it gives off very readily, and hence has a disagreeable odor. Barium sulphid is an efficient depilatory and if the sulphid and not the sulphhydrate is used, there need be no complaint of the odor.

VACCINE TREATMENT OF ARTHRITIS DEFORMANS—HIGH FREQUENCY CURRENT FROM PORTABLE COILS.

To the Editor:—Please inform me: 1. Whether there is a serum or vaccine treatment for arthritis deformans. If so, what is its usefulness? 2. Do the portable coils primarily adapted to Roentgen-ray work also furnish a high-frequency current of value for treatment, as is claimed by every manufacturer of such coils? O. R.

ANSWER.—1. There is no serum treatment for arthritis deformans. The etiology of the disease is only now being worked out. The relation of foci of infection to this disease has been emphasized especially by Billings and cannot easily be overestimated. The changes in the joints are probably not due to the absorption of toxins from the focus alone, but to actual localization of the bacteria themselves. The difficulty in obtaining the causative organism is great, owing to chronicity; but by improved methods Rosenow has succeeded in isolating peculiar streptococci from the excised lymph-glands draining the involved joints, from contracted and diseased adjacent muscles, and from excised portions of the diseased capsule of the joint itself, and recommends the use of the vaccine prepared from organisms thus isolated rather than from the streptococci in the focus. The use of even these vaccines, however, is quite futile unless the focus is removed. The peculiar character of the changes, in which there is a proliferation of endothelial cells in the blood-vessels about the involved joints with a consequent anemic necrosis, makes it clear that no matter what vaccine or other remedial agent is used, cure in advanced cases will be exceedingly difficult. Removal of the focus, the judicious use of autogenous vaccines in small doses prepared not from the focus but from the adjacent lymph-gland or tissue itself, together with rest, good air, passive motion and forced feeding comprise at present the rational procedures and are yielding substantial results. The streptococci isolated are quite different from those obtained in rheumatism; hence the uselessness of employing rheumatism vaccines.

2. Most of the portable coils—which are really step-up transformers—are quite as well adapted to furnish a high-frequency current as to do Roentgen-ray work.

SIGNS OF DEATH FROM INSOLATION

To the Editor:—Please give in detail the usual post-mortem appearances in a person dying from insolation. Is there any essential difference between heat exhaustion and heat stroke? The texts on this subject are exceedingly limited. I should especially like to know the changes likely to occur in the kidneys after death from heat exhaustion.

F. L. CARSON, M.D., Shawnee, Okla.

ANSWER.—Without going into minutiae, the following are the principal changes found in the bodies of persons recently dead from sunstroke: marked congestion of the internal organs, including the brain and its membranes; the blood largely fluid on account of diminished coagulability; cloudy swelling of the liver and kidneys. There is usually marked and early rigor, decomposition sets in early, and in some cases the swelling and congestion of the spleen are extreme. Leukocytosis and alterations in the red corpuscles are also described. The condition described as heat exhaustion and typical sunstroke may occur under the same conditions, but exhaustion is stated generally to follow prolonged exposure to high temperature combined with physical exertion in con-

fined spaces, as in the stokerrooms of steamships. There would seem to be some essential difference in the way in which heat exhaustion and sunstroke are caused, because in the former the distinguishing feature is depression of the body temperature far below normal and in the latter excessive elevation of the temperature; but it is possible that these changes in the temperature may be due to the same cause. No changes have been described in the kidneys as characteristic of heat exhaustion. There is an interesting discussion of the theories of sunstroke before the New York Academy of Medicine, reported in the *Medical Record*, 1900, lvii, 1130, in which the late Ira van Gieson points out that the symptoms indicate an intoxication due to changes in the blood, physical or chemical, and involving especially the nervous centers.

HOSPITAL FOR SMALL TOWN

To the Editor:—Our little town is planning on building a 10-room hospital building and furnishing it, and I would like to get what information I can regarding the specifications and price on a building of this size. I saw a couple of articles in *THE JOURNAL* a few months back regarding this, but I cannot find those articles and so I am appealing to you for aid.
X. Y. Z.

ANSWER.—In *THE JOURNAL*, Feb. 1, 1913, p. 390, there was published a list of articles on this subject. The following articles are supplementary and have been issued since that date:

- Stevens, E. F.: The Ward Unit of the General Hospital, *THE JOURNAL*, Jan. 24, 1914, p. 270.
Lamoreaux, L. A.: Architecture of the Modern Hospital for Contagious Diseases, *THE JOURNAL*, Jan. 24, 1914, p. 274.
Schmidt, R. E.: Architecture of the Great Charity Hospital, *THE JOURNAL*, Jan. 24, 1914, p. 277.
Stevens, E. F.: Surgical Unit, European and American Architecture Compared, *Modern Hospital*, September, 1913, p. 1573.
La Hospital, October, 1913.
Hornsbj, J. A.: Equipment of a Small Hospital; Making over a Dwelling House, *THE JOURNAL*, Jan. 24, 1914, p. 267.
Greener, E. A.: Board, Staff and Special Departments of a Small Hospital, *Modern Hospital*, July, 1914.
Matteson, V. A.: Small Hospital of Low Cost, *Modern Hospital*, April, 1914.

THE ARNETH FORMULA

To the Editor:—What is the Arneth formula?

J. R. DEVELLING, Arbo, Miss.

ANSWER.—Arneth in 1904 suggested a classification of the polymorphonuclear neutrophils as a guide in the prognosis of infectious diseases. He classified polynuclears into five classes, depending on the number of the nuclei contained in a cell. He determined that in the normal person a fairly constant relative percentage of the cells was found in each of the five columns as shown in the following table:

THE ARNETH CLASSIFICATION

Column	1	2	3	4	5
Percentage	5	35	41	17	2

For a recent discussion of this subject the following reference may be consulted:

Henson, Graham E.: "A Study of the Arneth Formula," *THE JOURNAL* A. M. A., Sept. 12, 1914, p. 922.

QUESTION OF FUMIGATING SCHOOLHOUSES

To the Editor:—Would it be feasible to practice daily fumigation of schoolhouses with formaldehyd for the prevention of acute infections of the respiratory tract? Can you give a satisfactory method? If answered through *THE JOURNAL*, please omit name and address.

S. D. N.

ANSWER.—It is, of course, physically possible to fumigate a schoolhouse daily with formaldehyd, but the advantage of such a procedure is questionable. It is now the general belief that the germs of the acute infections of the respiratory tract do not survive very long outside of the body. The trend of recent investigation has been to show that the main danger of infection is by direct transmission from convalescents, mild cases, and healthy carriers. Better results are likely to be obtained in preventing the spread of most infections by giving attention to the human sources of infection rather than by resorting to frequent fumigation with a germicidal gas.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

- ARKANSAS: Little Rock, November 10-11. Sec., Dr. W. S. Stewart, 404 Citizens Bank Bldg., Pine Bluff. Homeopathic, Little Rock, November 12. Sec., Dr. Scott C. Runnels, 900 Scott St., Little Rock. Eclectic, Little Rock, November 10-11. Sec., Dr. C. E. Laws, Ft. Smith.
CALIFORNIA: Los Angeles, December 8. Sec., Dr. Charles B. Pinkham, 727 Butler Bldg., San Francisco.
CONNECTICUT: New Haven, November 10-11. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven. Homeopathic, New Haven, November 10. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven. Eclectic, New Haven, November 10. Sec., Dr. T. S. Hodge, 19 Main St., Torrington.
DELAWARE: Dover and Wilmington, December 8-10. Sec., Dr. H. W. Briggs, 1026 Jackson St., Wilmington.
FLORIDA: Palatka, December 2-3. Sec., Dr. E. W. Warren, 102 Front St., Palatka.
MAINE: Portland, November 10-11. Sec. Dr. Frank W. Scarle, 776 Congress St., Portland.
MARYLAND: Baltimore, December 8. Sec., Dr. J. McP. Scott, 137 W. Washington St., Hagerstown.
NEBRASKA: Lincoln, November 11-12. Sec., Dr. H. B. Cummins, Seward.
NEVADA: Carson City, November 2. Sec., Dr. S. L. Lee, Carson City.
OHIO: Columbus, December 8-10. Sec., Dr. George H. Matson.
PENNSYLVANIA: Philadelphia, December 1-3. Sec., Dr. N. C. Schaeffer, Harrisburg.
SOUTH CAROLINA: Columbia, November 9. Sec., Dr. A. Earle Boozer, 1806 Hampton St., Columbia.
TEXAS: Waco, November 10-12. Sec., Dr. W. L. Crosthwait, Amicable Bldg., Waco.

Connecticut Homeopathic July Report

Dr. E. C. M. Hall, secretary of the Connecticut Homeopathic Medical Examining Board, reports the written examination held at New Haven, July 14, 1914. The total number of subjects examined in was 7; total number of questions asked, 70; percentage required to pass, 75. One candidate was licensed by examination and three through reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
New York Med. Coll. and Hosp. for Women	(1913)		89
LICENSED THROUGH RECIPROCITY			
College		Year Grad.	Reciprocity with
Boston University	(1896)	New Jersey; (1908)	Mass.
New York Homeo. Med. Coll. and Flower Hosp.	(1903)		New York

Connecticut Eclectic July Report

Dr. T. S. Hodge, secretary of the Connecticut State Board of Eclectic Medical Examiners, reports that one candidate, a graduate of the Eclectic Medical University, Kansas City, in 1912, was licensed through reciprocity with Arkansas, July 14, 1914.

North Dakota July Report

Dr. G. M. Williamson, secretary of the North Dakota State Board of Medical Examiners, reports the oral, practical and written examination held at Grand Forks, July 7-10, 1914. The total number of subjects examined in was 13; total number of questions asked, 110; percentage required to pass, 75. The total number of candidates examined was 6, all of whom passed. Six candidates were licensed through reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Chicago College of Medicine and Surgery	(1913)		80.8
Northwestern University	(1914)		81
Rush Medical College	(1914)		85
University of Illinois	(1913)		83
Marquette University	(1913)		75
Queens University, Kingston, Ontario	(1908)		75
LICENSED THROUGH RECIPROCITY			
College		Year Grad.	Reciprocity with
Northwestern University	(1910)		Illinois
University of Illinois	(1912)		Illinois
Johns Hopkins University	(1907)		Minnesota
Washington University	(1907)		Illinois
Hahnemann Medical College and Hosp., Philadelphia	(1902)		Minnesota
Milwaukee Medical College	(1910)		Wisconsin

Book Notices

DIE LEHRE VON OKKULTEN BLUTUNGEN. Von Prof. Dr. I. Boas. Paper. Price, 5 marks. Pp., 149, with 5 illustrations. Leipzig: Georg Thieme, 1914.

In every obscure case of gastro-intestinal disease, as well as in many not obscure, an examination or repeated examinations should be made for occult blood in the contents of the stomach and feces. Boas describes the technic of these examinations, estimates the value of chemical and physical tests, considers the meaning of occult blood derived from the different parts of the gastro-intestinal tract, and lastly discusses prognosis and treatment. The chapters on the technic of a search for occult blood and its diagnostic significance are the ones most generally interesting. This necessitates the discussion of the differential diagnosis of all the lesions of the esophagus, stomach and intestines which may cause blood to appear in the contents of the stomach and intestines. Occult blood also sometimes appears in the feces because of disease of the liver, pancreas, heart, kidneys and infections, such as typhoid. Therefore the field of differential diagnosis is extensive, a consideration of which the presence of occult blood in the feces makes necessary. No one could discuss this with more authority than Boas. The book contains several illustrations and one colored plate of spectroscopic findings.

AURICULAR FLUTTER. By William Thomas Ritchie, M.D., F.R.C.P.E., F.R.S.E., Physician to the Deaconess Hospital, Edinburgh. Cloth. Price, 10 shillings 6 pence net. Pp., 144, with 107 illustrations. Edinburgh: W. Green & Son, 1914.

This book is well printed, and many of the illustrations are heavy paper reproductions of electrocardiograms. The subject of auricular flutter has been carefully studied by the author, who reviews the work of others and records the results of his own clinical and experimental research. The relation of flutter to auricular fibrillation, to block, and to other types of tachycardia is discussed. What is known of the pathology of the condition and its clinical manifestations is also detailed. An introductory chapter gives some of the salient points regarding the origin of the heart-beat and the conducting system of the heart, together with some of the commoner disturbances such as extrasystole and auricular fibrillation. Some of the elementary facts concerning the electrocardiogram are also set forth with unusual clearness. The monograph is in every sense a credit to British clinical research and is indispensable to one who desires to have an authoritative epitome of what is known concerning auricular flutter. It is particularly valuable to one who wishes to have under one cover the important contributions to this subject made by Ritchie.

KLINISCHE RÖNTGENDIAGNOSTIK DES DICKDARMS UND IHRE PHYSIOLOGISCHEN GRUNDLAGEN. Von Privatdozent Dr. Gottwald Schwarz, Assistent und Leiter des Röntgeninstituts der K. K. I. Mediz. Universitätsklinik in Wien. Paper. Price, 10 marks. Pp., 153, with 108 illustrations. Berlin: Julius Springer, 1914.

This is a useful and practical monograph for those interested in the examination by Roentgen ray of the colon rendered opaque by shadow-casting substances. Special chapters are devoted to the anatomy and physiology of the colon and the technic of examination. The clinical value of the Roentgen-ray method is emphasized by carefully executed diagrams and by reproductions of well-selected plates. Due credit is given to the works of American actinologists and some of the plates credited to them.

ANALYTICAL TABLES OF THE ANATOMY AND PHYSIOLOGY OF THE FIFTH CRANIAL OR TRIGEMINAL NERVE AND OF ITS GANGLIA AND CONNECTIONS. Being a Compendium of the Map-Scheme of this Nerve. By Dr. L. Hemington Pegler, M.D., M.R.C.S., Senior Surgeon, Metropolitan Ear, Nose and Throat Hospital. Cloth, Price, \$8. New York: Paul B. Hoeber, 1913.

This chart, accompanied by a thirty-page pamphlet of analytical tables of the peripheral distribution of the trigeminal nerve, is well designed, clearly printed and accurate. The Basel anatomic nomenclature is followed with, however, some modifications, which do not in all cases seem advantageous.

Miscellany

The Bacteriologic and Chemical Quality of Commercial Eggs

The scientific literature on the bacteriology and chemistry of eggs is surprisingly meager, considering the importance of this article as food. In a recent report (Pennington, M. E., and others: A Bacteriological and Chemical Study of Commercial Eggs in the Producing Districts of the Central West, Bull. 57, U. S. Dept. Agric., July 20, 1914), the Food Research Laboratory of the Bureau of Chemistry discusses the quality of eggs which go to the egg-packing establishments in the Middle West. The work done is part of an investigation of the preparation of frozen and dried eggs.

In eggs, as in other foodstuffs, bacteria may increase enormously before producing changes capable of detection. Fresh eggs (eggs not more than twenty-four hours old, which have been kept in a cool place) may contain a wide variety of bacteria, but in small numbers. *Bacillus coli* is practically never present. Bacterially "market fresh" eggs were found not to differ markedly from strictly fresh eggs.

The best and simplest index of the chemical stability of the egg is the amount of loosely bound nitrogen present. Most of this is contained in the yolk. Western summer eggs of highest quality gave an average of 0.0013 per cent. loosely bound nitrogen in the whole eggs, and 0.0023 per cent. in the yolk.

In this investigation, eggs of various grades were examined, samples of each being opened aseptically in the laboratory and compared with composite samples opened commercially in the packing-house. A large proportion of the eggs used in the frozen and desiccated egg industry are classed commercially as "seconds." In the spring, before the candling season begins, this grade consists of eggs sorted out as small, dirty or oversized. After June 1, when all incoming eggs are graded according to the condition of the contents, seconds also include shrunken eggs, "hatch spots," "weak eggs" (stale eggs in which the form and position of the air space change on candling), etc. Among the classes of eggs generally or always detected and rejected by the candlers are those with bloody whites, the "white rots" (eggs in which the whites and yolks are intermingled), the "heavy spots" or "spot rots" (eggs having the yolk adherent to the shell) and "black rots" (eggs in the last stages of decomposition). Of these classes of eggs, 100 per cent. of the "black rots" and the eggs with yolks heavily adherent to the shell, 83.2 per cent. of the "white rots" and 66.6 per cent. of these eggs with yolk slightly adherent to the shell were found to have bacterial counts of over 1,000,000 per gram. *B. coli* were present in most of the samples. The eggs with bloody whites showed less than 5,000 organisms per gram, though 40 per cent. of eggs with "blood rings" due to partial incubation were found to have over 1,000,000 organisms per gram.

Some other classes of deteriorated eggs are seldom distinguishable by candling. These cause much trouble in the frozen and dried egg industry. The majority are comprised in three groups: eggs which have a greenish tinge in the albumin; "sour eggs," which have a peculiar pungent odor when opened, and "musty eggs," which have a penetrating, persistent odor suggesting that of the common jimson weed. No conclusive investigation was made of the "musty eggs." These and the "sour eggs" are always rejected by the egg-breakers. Some establishments reject the eggs with the green whites if the breaker happened to detect them; others use them if odorless. Both the "sour eggs" and the eggs with greenish albumin are invariably found heavily infected with bacteria (over 1,000,000 to the gram). Most of the classes of eggs showing high bacterial counts would be rejected by the housewife or conscientious baker on inspection.

The average amount of ammoniacal nitrogen (wet basis) rises from 0.0013 per cent. in fresh eggs to 0.0017 per cent. in stale eggs, 0.0019 in dirty eggs, 0.0020 in eggs with yolk partially mixed with white, 0.0023 in eggs with yolk slightly

adherent to the shell, 0.0036 in "white rots," 0.0040 in eggs with yolk heavily adherent to the shell, 0.0043 in "sour eggs," 0.0042 in eggs with a green white, and 0.0229 in "black rots." While a dirty shell is not positive evidence that the egg within is contaminated, such eggs do not keep well. Mold may appear in either clean or dirty eggs; it often appears directly beneath a spot of dirt on the shell.

It is suggested that there may be a connection between the moisture content of the egg and its keeping qualities. A study of the water content of fresh eggs from the middle of February to the first of November shows that in August and September, when the quality of the eggs is considered lowest, the water content is highest; in the early spring, when the eggs are of highest quality, the water content is lowest. This statement of the increased water content is not made authoritatively, but merely as suggesting a promising field for investigation.

A study such as this is the basis on which a more detailed inspection of the complete egg industry must be founded. The next report is to deal with commercial procedures in the packing-house, environment, etc. Later investigations will carry the research to the final use of the prepared egg by the baker or the housewife. The work is elementary and practical and the first report indicates a quality and thoroughness which prove still further its great value.

Systematic Impairing of the Appetite in Treatment of Obesity

W. Sternberg has long been preaching that dietetics is the Cinderella of the medical sciences. In these days of what Rubner calls the "hypertrophy of chemistry," dietetics is made to serve as the slave of chemistry. Everything is estimated by weight and measures when, in reality, qualitative factors, rather than quantitative, are of predominant importance in nutrition. More use, he declares, should be made of drugs to reduce the appetite and prevent hunger in overhearted eaters, while medicines of any kind should be punctiliously avoided when it is a question of increasing and tempting the appetite. Even the healthiest would soon lose their appetite if they were taking medicines as systematically as are given to many patients in our sanatoriums.

In his recent protest against this, in the *Allgemeine medizinische Central-Zeitung*, he says that he has found preparations of iodine particularly useful to reduce the appetite; and also that by anesthetizing the stomach mucosa even the sensation of hunger is warded off. Even peppermint lozenges or menthol tablets reduce the sensibility of the esophagus and stomach, and minute doses of camphor have the same effect plus a sensation of satiety—all of which logically aid in treatment of obesity. THE JOURNAL has previously mentioned his endorsement of coffee, taken early in the meal, in treatment of obesity. Coffee, he reiterates, reduces the appetite for other food and is also liable to interfere with sleep—the overcorpulent are usually inclined to sleep too much.

Pellagra Treated with Picric Acid

In thirty-five cases the eruption was treated by W. T. Wilson (Bulletin Harris County Medical Society, July, 1914) with picric-acid gauze official, or gauze soaked in a saturated solution of picric acid. For mucous membranes a 0.5 per cent. solution was used as a gargle. Internally most patients were given 25 drops of a 1 per cent. solution three times a day; some $\frac{1}{4}$ to $\frac{1}{2}$ grain every three hours. Only three patients were put on a diet. All three were insane and were placed on milk and eggs for from seven to ten days and regular diet after that.

Improvement is first noted in the mucous membrane of the mouth, tongue and throat about the fourth day; in about five days intestinal symptoms improve, and in about seven days the skin begins to desquamate and assumes a natural appearance. A majority of these cases had the dry form, but four or five were of the moist form of erythema. The two types were equally amenable to treatment. There were no toxic effects from the drug in evidence in any case.

Medicolegal

Authorized Garbage Reduction Plant Not a Public Nuisance

(*Toledo Disposal Co. vs. State (Ohio)*, 106 N. E. R. 6)

The Supreme Court of Ohio reverses a judgment imposing a fine of \$300 on the disposal company for maintaining a public nuisance, and ordering it to abate the same. The court says that the mode of disposing of garbage and refuse matter is one of the difficult questions involved in municipal sanitation. Its great importance is not doubted. It is true that there has not yet been complete agreement as to the best and most appropriate method for the disposal of garbage and refuse material; but the testimony tendered and rejected in this case showed that the city of Toledo made every effort to proceed on the most modern and scientific plan. The city in the discharge of its duty to safeguard the health of its people pursued the course pointed out by the state. It would seem to be incontrovertible that the court would not construe that to be a crime punishable under one statute which was done in the exercise of powers specifically granted by another statute. Such a holding would be contrary to established rules of construction. It would, in effect, attribute to the legislature a disregard of wise public policy. The state cannot maintain a criminal prosecution against a defendant for conducting a plant and business located, constructed and operated under an express contract with a municipality, made under legislative authority, where the plant is conducted under municipal control and regulation, with care and skill, and in such manner as to produce the least possible annoyance, and where it is all done for the purpose of conserving the health and safety of the public. In the exercise of the police power, the state and municipal authorities may make all such provisions as are reasonable, necessary and appropriate for the protection of the public health and comfort, and when any such provision has a real and substantial relation to that object and does not interfere with the enjoyment of private rights beyond the necessities of the situation, every intendment is to be made in favor of its lawfulness.

Failure to Invert Foot in Treatment of Pott's Fracture

(*Marchand vs. Belin (Wis.)*, 147 N. W. R. 1033)

The Supreme Court of Wisconsin affirms a judgment for the defendant, who was charged with malpractice in the treatment of a Pott's fracture. The court says that the evidence showed that the fracture was a severe one, in which the fibula was splintered and the ligaments of the ankle-joint were ruptured; that the foot was much swelled and discolored, and the skin was partly abraded in places at the time of the first treatment. As to the condition at that time, January 23, and from then until about February 13, there was no evidence other than that of the defendant, and if his evidence as to the conditions existing and the treatment given was true he was guilty of no malpractice. The plaintiff, aged 52, sustained the injury January 23, by falling from a ladder.

It was contended in the plaintiff's behalf that, since the evidence showed that the conditions testified to by the defendant did not usually obtain in ordinary Pott's fractures for so long a time, the jury had a right to find that they did not in this case. Hence, since it was shown that in cases of ordinary Pott's fractures the danger of gangrene was usually passed in from seven to ten days, and since bony union does not take place until the third week, the jury might find malpractice from failure to invert the foot after the danger of gangrene had passed and before bony union took place. The difficulty with this contention was that the plaintiff's fracture was not an ordinary Pott's fracture, but a severe and complicated one; that there was nothing inherently or obviously incredible about the defendant's testimony as to the conditions found the first day he examined the leg, or as to their continuance for the length of time shown. The trial court, therefore, properly held that such conditions must be held as verities, since there was no evidence to the contrary.

Another claim made was that the evidence of the defendant showed that he was ignorant of the practice of inverting the foot in cases of Pott's fractures, and therefore did not do it in this case. Conceding, for the sake of argument, that this was true, still, if the treatment he gave was the proper one under the conditions existing, his ignorance became immaterial. He said, however, that the reason he did not invert the foot up to about February 13 was because he feared gangrene, and that thereafter bony union began, and he did not deem it good practice then to invert it. The treatment given under the conditions as testified to by the defendant was practically sanctioned by all the physicians who testified as to what constituted good practice. It was therefore shown that the defendant exercised such care and skill and pursued such treatment as physicians and surgeons in good standing usually exercised and pursued in the same or similar localities under the same or similar circumstances. This measured the extent of his undertaking.

In an action for malpractice it is incumbent on the plaintiff to show wherein the defendant has been negligent or failed in his duty under the circumstances or conditions existing in the case that is tried. It is not enough to show that generally, or under other conditions, the conduct complained of might be found negligent.

Residence and Failure to Register Authority Must be Alleged

(*Young vs. State (Tex.)*, 167 S. W. R. 1112)

The Court of Criminal Appeals of Texas reverses a conviction of unlawfully practicing medicine, for want of allegations as to the defendant's residence and failure to register his authority for practicing medicine. The court says that very soon after the act of 1907 was passed it held that it was essential to allege the residence of the accused and that he had not registered his authority or license in the district clerk's office of the county of his residence. Several legislatures of the state have had sessions since then, and, in addition, the revised penal code was adopted, and at no time and in no way has the legislature changed the act as originally enacted. The court has again carefully considered this whole act and is of the opinion that, because of the language thereof, both of said allegations are necessary, and an indictment or complaint and information which omits them is fatally defective. It probably would be sufficient if the pleading should allege that the accused's residence is unknown, or that he is a non-resident of the state, as the case may be, and that he has not registered his certificate or authority in the county where it is alleged he has unlawfully practiced; but it is unnecessary for the court to decide that question in this case. This court erroneously held the information in *Stiles vs. State*, 148 S. W. R., 326, sufficient, when it omitted said allegations, and that case on that point is hereby expressly overruled.

Death from Occupational Disease Not Accidental

(*Adams vs. Acme White Lead & Color Works (Mich.)*, 148 N. W. R. 485)

The Supreme Court of Michigan reverses a judgment of the Industrial Accident Board, which awarded compensation for an occupational disease, or death, from lead poisoning. The court holds that the Michigan workmen's compensation act was not intended to provide compensation for industrial or occupational diseases, but for injuries arising from accidents alone. The board thought that the controlling provision of the statute on this point was, "If an employee . . . receives a personal injury arising out of and in the course of his employment," he shall be paid compensation, etc. But the court thinks that it should be held that the words "personal injury," as quoted by the board, refer to the kind of injury included in the title and other portions of the act, which plainly refer to "accidental injury to, and death of, employees." The court is not able to find a case in which an employee has recovered compensation for an occupational disease at common law.

Society Proceedings

COMING MEETINGS

Amer. Assn. for Study and Prevention of Inf. Mortal., Boston, Nov. 12.
Amer. Public Health Association, Jacksonville, Fla., Nov. 30-Dec. 5.
Medical Association of the Southwest, Galveston, Nov. 10-11.
Medical Society of Hawaii, Honolulu, Nov. 28-30.
Southern Medical Association, Richmond, Nov. 9-11.
Southern Surgical and Gynecological Assn., Asheville, N. C., Dec. 15-17.
Western Surgical Association, Denver, Dec. 18-19.

MINNESOTA STATE MEDICAL ASSOCIATION

Annual Meeting held at St. Paul, October 1-2, 1914

The President, Dr. A. E. SPALDING, Luverne, in the Chair

Prostatectomy

DR. E. S. Judd, Rochester: The suprapubic operation insures a perfect functional result, but the opening into the bladder must be made through a loose cellular fat tissue in the space of Retzius. This tissue once infected is difficult to drain and, while the infection is not virulent, it may prove serious in a patient whose kidneys are already badly damaged. We have endeavored to develop a technic in performing the suprapubic operation which would minimize the possibilities of infection in this space. The bladder is cleansed and emptied and the catheter is left in place. There is less danger of infecting the suprapubic space by opening into a dry, clean bladder than into one distended with wash water. The hypertrophied prostate is enucleated in the usual way and the capsule immediately packed with gauze. The wound in the bladder is then retracted open by three Walker retractors. The catheter is drawn out of the suprapubic opening, caught by a clamp and held to one side. The gauze is removed from the prostatic capsule, and the bladder edge of the capsule is sutured with firm, plain catgut. No attempt is made to catch the torn off end of the urethra, but the needle is passed as deeply as possible into the prostatic tissue. By carefully sponging and placing the sutures at the bleeding points in many cases it is possible completely to control the oozing. The clamped end of the catheter is left out of the suprapubic opening in the bladder and the bladder closed tightly around it. A good sized hole is cut in the side of the catheter just above its entrance into the urethra. This method of leaving the catheter projecting through the suprapubic wound into the bladder is a safeguard against clotting and serious spasm. As soon as the urine is free from blood, the catheter is drawn into the bladder where it is left for a number of days. In many cases there is no urinary leakage at any time. In the few instances in which leakage occurs, the urine runs over a surface already granulated and these granulations prevent infection in this space.

DISCUSSION

DR. OSCAR OWRE, Minneapolis: A short time ago I performed cystoscopy on a man, 50 years of age, who was complaining of some urinary obstruction and symptoms suggestive of stone in the bladder. The cystoscope slipped through a large urethra, and springing from the bladder and close to the vesical neck could be seen a small smooth adenomatous overgrowth from one of the glands, about the size of a hazelnut. This could be pushed from side to side into the bladder. It was removed and the patient recovered. There was no prostatic hypertrophy recognizable on palpation through the rectum and no impingement with the cystoscope in the bladder. By refined cystoscopic methods we may be able to ascertain the exact growth that is responsible for the obstruction and then direct our surgical procedure accordingly.

DR. ROBERT EARL, St. Paul: The two lateral lobes of the prostate are histologically one, but physiologically they are separate. This is of great importance, especially in treating tuberculosis of the prostate, in which condition it would not be wise to try to enucleate the entire prostate but simply curet out and treat the diseased side in order that the tuberculous infection may not be spread to the other side.

Suprapubic Cystotomy

DR. THEODORE BRATRUD, Warren: The bladder can be opened suprapubically in the majority of cases by local anesthesia, our preference being for one-quarter of 1 per cent. novocain infiltrated in the line of incision. We have found that instillation of a 1 per cent. solution of quinin and urea hydrochlorid into the bladder one-half hour before operation is of material assistance in reducing the pain, which cannot be so well controlled by infiltration, and it lessens the discomfort after operation. It is preferable to use water dilatation of the bladder. In cases that are badly infected, it may be advisable to drain off the water as soon as the peritoneal fold overlapping the bladder is out of the way and guy sutures inserted into the bladder. This procedure is not so essential when one makes use of the method suggested by Rovzing to apply a 1 per cent. silver nitrate solution to all the exposed tissues before the bladder is opened. We have followed this method in all of our cases, and in no case have we had any signs pointing to infection of the space of Retzius. It is important to secure an opening as high on the bladder extraperitoneally as possible, if it is planned to allow the drainage opening to close. This technic is not possible in cases of contracted and hypertrophied bladders, as satisfactory distention of the bladder cannot be secured and the peritoneal fold must be lifted out of the way by dissection. In these cases local anesthesia will hardly suffice, but with a small amount of ether the operation can be accomplished readily. In these cases the use of a sound, when the bladder can be entered by the urethra, is essential. Patients who come with enormously distended bladders, which it is feared to empty at once, can be handled safely by introducing a small aspirating needle into the bladder and leaving it *in situ* for twenty-four hours or longer. As soon as the bladder is opened and its contents removed, the interior can be inspected and calculi removed if present, and the bladder closed around a Pezzet catheter. A small wick saturated with 1 per cent. silver nitrate solution is introduced into the space of Retzius and the hole is closed in the usual manner. Ordinarily a rubber bag connected to the catheter with a small glass tube furnishes a satisfactory receptacle for the urine.

DISCUSSION

DR. ARCHIBALD MACLAREN, St. Paul: Cystotomy, when found necessary, should be preceded by cystoscopy. After we have determined that a patient has an infected bladder, with prostatic obstruction, the thing to do is to establish drainage through the urethra, which will help these patients tremendously. The mortality unquestionably has been greatly reduced in the last few years since we began to drain these bladders and to relieve back pressure on the kidneys.

DR. ARTHUR N. COLLINS, Duluth: In order to put a catheter in the bladder to get permanent drainage, do not stab the bladder, and if drainage is attempted, get plenty of room. After you have put in a drainage tube, see that it is in the bladder, and that it is anchored so that it will stay in the cavity.

DR. FRANKLIN R. WRIGHT, Minneapolis: It may be advisable to use the cystoscope in early cases of enlarged prostate, but certainly in extreme cases, in which the urethra is bent at a right angle, it would be a mistake to undertake to pass a straight instrument through it. The suprapubic method for enlarged prostate in my opinion is the one which will be adopted as the standard.

DR. JAMES E. MOORE, Minneapolis: Dr. J. E. Summers of Omaha a number of years ago called attention to the fact that many of the old men who die promptly after prostatectomy could undoubtedly have been saved if a suprapubic cystotomy had been done first, drainage established, getting the kidneys to work properly, and prostatectomy then performed.

DR. R. E. FARR, Minneapolis: There is danger in emptying the distended bladder. It is my practice to introduce a small trocar. The bladder may be emptied the first time, or if completely emptied, it is immediately filled with saline solution or a mild boracic acid solution to prevent future trouble. Then a suprapubic cystotomy is done.

DR. CHARLES H. MAYO, Rochester: There is great risk in suddenly and completely emptying a bladder that is enormously distended. I have seen unfortunate results from the use of the catheter in such cases, the men dying rapidly from a hemorrhagic condition of the kidneys. I have seen good results obtained by drainage for temporary purposes; with the catheter tied in the urethra one can get as good drainage as from suprapubic cystotomy. Thirty years ago Hunter McGuire brought out the simple method of opening the bladder for stone. He instituted suprapubic drainage and relieved old men for a time, then later he removed the real cause of the trouble—the enlarged prostate.

Herter's Infantilism

DR. OLIN W. ROWE, Duluth: In a case of this kind I made use of a vaccine prepared from a culture of the *Bacillus coli*. June 14 ten million were given. On the following day the child felt some better, and took 3 ounces of skimmed mother's milk without the stomach tube. A further loss in its weight was recorded. A slight desire to eat was observed on the day following. Two days later twice the original dose of vaccine was given. This was followed by a stay in the loss of weight. The child felt better, developed an appetite and did not lie in the semicomatose condition which had been such a prominent feature of the preceding week. From this time on the vaccine was given in rapidly increased doses, every third or fifth day, until the hundred million mark was reached, at which time there was a slight reaction. The dose was dropped to fifty million, and then increased rapidly to ninety million. Twenty-three doses were given in all, the last one September 24. During this period of improvement the weight increased from 40 to 65 grams a day. Whole mother's milk rapidly replaced the skimmed milk, and this was in turn replaced by whole cow's milk, to which was added dextrimaltose, meat, gelatin, fish, etc. Her fat tolerance improved from a condition in which skimmed mother's milk was handled with difficulty, to a state which permits of 24 ounces of whole cow's milk without bad effect. The stools show considerable fat soup, but no free fats or fatty acids. Her tolerance for starchy foods has increased over 400 per cent. in two months. In fact, a general diet consisting of whole milk, cereals, vegetables, meat and a small amount of fruit pulp, with a total caloric value considerably in excess of her requirements, is taken without appreciable difficulty. This case is the second one reported in which vaccine therapy has been given a trial.

DISCUSSION

DR. J. P. SEDGWICK, Minneapolis: General infantilism is represented by myxedema, which is really more common in Minnesota than is generally believed. I have an infant now in the third month with myxedema, which is improving rapidly under thyroid extract. Mongolian idiocy is seen quite frequently in Minnesota. These cases are mistaken, by those who have not seen them, for the myxedematous type. Almost every patient that comes into the clinic has been given thyroid.

DR. W. R. RAMSEY, St. Paul: I have one or two cases of infantilism that are extremely troublesome and long drawn out. Their recovery is slow. In several instances I have been able to determine that the origin of the trouble was overfeeding. Two of these cases were greatly overfed with fat, so that they would come under Czerny's primary cause of fat injury. These cases are intolerant to fat even in small amounts.

DR. F. W. SCHLITZ, Minneapolis: Cases of infantilism are quite rare. During my service in the dispensary the past four years I have seen but two cases of the type described. Analogous to the condition we find in children who have fat disturbances after being fed with cow's milk, there is a loss of the element of calcium in the feces and urine. Experiments carried on at the Rockefeller Institute in three cases show that the loss of calcium does not necessarily have any connection with the amount of fat that these children lose in the feces. Even if large amounts of phosphates and fatty and volatile acids are present in the feces, the calcium loss of the organism is not necessarily large on that account.

So there was no definite connection between the fat metabolism and the loss of calcium as these cases show.

DR. E. J. HUENEKENS, Minneapolis: I would like to report a case under observation which I think comes under the classification of Founder's hyperdystrophy, but which may be classed as Herter's infantilism. It is a baby, 21 months old, which only weighs 6,200 grams, less than the normal weight for an infant 1 year old. The baby has received the best of attention since birth. The mother took it from the breast and put it on different mixtures, but these mixtures did not agree with the child, and the minute the baby was put back on breast milk it recovered promptly. Since the ninth month different forms of cow's milk have been tried without success. I am now trying a buttermilk preparation.

(To be continued)

INDIANA STATE MEDICAL SOCIETY

Annual Meeting held at Lafayette, Sept. 24-25, 1914

(Continued from page 1501)

Diagnosis and Treatment of Simple Glaucoma

DR. ALBERT E. BULSON, JR., Fort Wayne: Glaucoma simplex is a relatively common disease of middle or advanced life, and unattended by active inflammation. It is attended with increased intra-ocular tension, which, however, may be overlooked unless the examination is thorough. Its course is very insidious, and if unchecked terminates in blindness. Therefore, its early recognition and the adoption of appropriate treatment are of supreme importance. Among the early symptoms noted by the patient are transitory attacks of blurred vision, night blindness and the apparent necessity of changing glasses often. Considerable difference of opinion exists concerning treatment. Lowering the intra-ocular tension is the desired result. Of operations, there are several, including iridectomy, anterior and posterior sclerotomy, cyclodialysis and trephining. The last-named bids fair to supplant all other forms of operative treatment. The success of the trephine operation, however, depends almost entirely on a reasonably faultless technic. Medicinal treatment is confined to the use of the miotics, physostigmin or pilocarpin. Physostigmin is the more active. That miotic treatment does hold the disease in check for long periods of time cannot be doubted. In my own experience physostigmin in olive oil is less irritating than in aqueous solution, though there are some patients who do not tolerate physostigmin at all, and for whom pilocarpin must be prescribed. In my judgment, miotic treatment always should be the first treatment employed, and continued so long as effective. When it ceases to be effective, operative measures should be considered.

Inasmuch as arteriosclerosis, with its increased blood-pressure, chronic constipation, gouty and rheumatic diatheses are predisposing factors, it is incumbent on the physician to recommend appropriate treatment, and a proper regulation of the habits of life. Among operations, the trephine is to be preferred, and my results so far have been highly satisfactory. Though sufficient time has not elapsed to show what the ultimate outcome will be, several cases have shown for months a relatively normal intra-ocular tension and retention of the sight and fields of vision possessed at the time of operation. Preservation of the best vision for the longest period of time for the patient suffering from simple glaucoma necessitates discovery of the disease early in its progress, and the adoption of appropriate remedial measures.

DISCUSSION

DR. D. W. STEVENSON, Richmond: These patients are pessimists. A great many have peculiar mental symptoms, partly due to the eye trouble, but also associated with the general constitutional trouble. Of special importance is care in regard to the diet. The patients have gouty symptoms, arteriosclerosis, and high blood tension, and the treatment of these conditions often has a great deal to do in relieving the eye symptoms as well as the mental symptoms. I have done about eight trephine operations, and have had some excellent results with it. It is the most promising operation we have.

DR. L. D. BROSE, Evansville: The diagnosis of simple glaucoma is not always easy. Augmented tension and glaucoma are by no means identical conditions. It is rather a general experience to find the former, temporarily at least, during severe iritis, and yet the eye afterward remains free from glaucoma. A diagnosis of glaucoma should not rest on the disclosure of the ophthalmoscope; all other symptoms of the disease should be sought for. Progressive peripheral contraction of the nasal side of the visual field is highly indicative of glaucoma when found with unilateral cupping of the disk, or with bilateral excavation extending to the periphery of the nerve, with overhanging edges and recession of the lamina cribrosa. Misty vision and the appearances of halos are not of frequent occurrence in glaucoma simplex, but when present are corroborative evidence of its existence. Operative interference, even when done most skilfully, is only too often an uncertain means to an end, and we must remain content with having ameliorated some of the symptoms, while the disease per se is not cured. The patient's general condition should be studied carefully in all suspected cases.

DR. F. C. HEATH, Indianapolis: Glaucoma and cataract are both much more common in hot countries than elsewhere. The use of the tonometer is of much value and the regulation of the habits of the patient is very important. Nothing was said of internal treatment. It is of advantage to look after the elimination in these cases, and I attach some value to the use of the salicylates. In many cases I have seen advantage from the use of miotics. Regarding operative treatment: While iridectomy has served us well in acute glaucoma, we have been disappointed with its effects in chronic glaucoma. I have not yet had the opportunity to do a trephine operation, but have been led to believe that it is the operation to be done.

DR. W. A. HOLLIS, Hartford City: I have injected subconjunctivally sodium citrate in 5 per cent. solution, as advocated by Fisher of Cincinnati, in connection with miotics, and its effect has been very gratifying, the tension subsiding somewhat in a very short while and the patient feeling much better.

DR. T. C. HOOD, Indianapolis: Trephining is a good operation.

DR. A. E. BULSON, JR., Fort Wayne: I look on every case of simple glaucoma as eventually an operative case. For that reason I am opposed to the subconjunctival injections of anything that may possibly produce adhesions. Also, I have noticed that nearly all who have reported end-results from the subconjunctival injection also employed a miotic. I get the same results with the miotic without sodium citrate. Concerning the trephine operation: We must not lose sight of the fact that the patient has a disease that is going to end in blindness. We know there are certain risks attending the trephine operation, but they are not one-tenth so great as those attending iridectomy. The secret of success in most of these cases is in dissecting the conjunctival flap very much as Elliott does, and then making the opening partly in corneal tissue, partly in scleral tissue, after the cornea has been split. My principal plea, however, is for earlier recognition of these cases.

Trachoma in Indiana

DR. ELDRIDGE M. SHANKLIN, Hammond: It is estimated that it costs the state \$3,000 to educate a blind child. The greatest cost is not to the state, however, but to the county and the individual. Trachoma victims are rapidly appearing in the reports of many of our county asylums for the poor, and needlessly, too. In many cases intelligent, thorough and persistent treatment will get these people out of the poor-house. Publicity is our greatest asset in fighting trachoma. We must assure the laity, and some physicians as well, that trachoma is a "dangerous, contagious disease," and that it is communicated chiefly through the use of a common towel, etc. Physicians should be urged to cease using the term "granulated eyelids" for any and all lid affections. This is a most pernicious habit. More publicity should be given to trachoma and its dangers; cases should be reported immediately, that the health authorities may be apprised of the real trachoma situation; committees on conservation of vision

should urge those making public addresses on conservation to go into this subject thoroughly.

DISCUSSION

DR. ALBERT E. BULSON, JR., Fort Wayne: Children who have the disease should be segregated. Regarding the cases that become indigenous, much can be done for these patients in the way of operation. I am convinced that there is absolutely nothing in the way of treatment that will take the place of the old copper sulphate treatment for trachoma.

DR. L. D. BROSE, Evansville: The trouble with most of these trachoma patients is that we treat them for awhile and they get well. Then they stop treatment, and after awhile return in worse condition than before. Among children the condition is neglected.

DR. W. F. HUGHES, Indianapolis: Ten years ago three-quarters of the trachoma cases were in persons of foreign descent. At the present time fully one-half of the patients who apply in the clinics for treatment are American-born citizens. I agree with Dr. Bulson that copper sulphate is a valuable agent in treatment. However, I place my reliance chiefly on silver nitrate. It has the objection, of course, of producing a faint stain, but that is a small point when compared with retained vision. I am perfectly satisfied that constant treatment—it makes no difference what you use—under sanitary conditions will make it possible for vision to be retained in a very large proportion of the cases. Education is most important; quarantine is out of the question.

Effects of Light on the Eye

DR. W. F. HUGHES, Indianapolis: The chief results of bad lighting systems are shown in a loss of efficiency, immediate and remote, and asthenopia. Proper diffuseness, with sufficient intensity to give maximum details, seems to be the goal, from the point of view of comfort and welfare of the eye. The increase of artificial illumination often producing distinctly harmful effects on the eyes demands a closer cooperation between lighting engineers and oculists, for the standardization of lighting systems, primarily on the basis of the effect on the eye.

DISCUSSION

DR. ELDRIDGE M. SHANKLIN, Hammond: The best proof of the fact that our present-day lighting systems are not meeting the requirements exactly is the fact that we are constantly being confronted by new systems. The most interesting side of this question is the traumatic effect of extreme light on the eyes. For example, the effect of the light coming from molten metal at different degrees. In the open hearth furnace steel process work the men all wear Cobalt blue glasses. The increasing use of the oxyacetylene process—whether in cutting or welding—has also increased the number of injuries to the eye from extreme light. Men doing this work should wear glasses made up of two layers of Cobalt blue, with an interposition of the red lens, and metal helmets.

The Bronchoscopic Treatment of Spasmodic Asthma

DR. GEORGE F. KEIPER, Lafayette: The bronchoscope is to be used after all other means have failed. Some of the patients treated by this method have been reported cured by one application of the bronchoscope. The introduction of the tube releases considerable secretion from the lungs, which secretion no doubt acts as a decided irritant to the mucosa of the respiratory tract, causing the spasm of the bronchi and bronchioles. My experience with this treatment has been limited to one case, a very severe and stubborn one, which yielded to the treatment, the asthma not having returned to date.

DISCUSSION

DR. GEORGE F. SPOHN, Elkhart: Regarding the psychopathic part of the question: I think this has a great deal to do in the treatment of these cases. These patients become alarmed when they begin to become dyspneic, and breathe through the mouth. If you will compel them to breathe through the nose at once, the bronchioles will not become dry. A favorable effect is produced by quieting these patients, and giving them the proper mental suggestion.

DR. ALBERT E. BULSON, JR., Fort Wayne: While I have used the bronchoscope for the removal of foreign bodies, I have never felt justified in using it in the treatment of spasmodic asthma, because I have obtained the same result and more easily by intratracheal injections of cocain. These cases require careful study, for they arise from many causes.

DR. P. R. CLAPPER, Lafayette: Ordinarily, for symptomatic relief, the injection of epinephrin chlorid, probably 10-drop doses, repeated daily, has a prophylactic value, and for immediate relief even as high as 15 drops would afford great relief, sometimes tiding the individual over the attack.

DR. GEORGE F. KEIPER: I wish to emphasize the fact that it is wise to exhaust every other means before resorting to a means of this kind, which is rather formidable. In passing the bronchoscope it is not necessary to use anesthesia. It can be passed quite easily by one accustomed to the introduction of such an instrument. Also, it is not necessary to use this method in every case, but it is certainly worth a trial in severe cases when all other means have failed.

Treatment of Incipient Cataract with Subconjunctival Injections of Mercuric Cyanid

DR. A. B. KNAPP, Vincennes: In the treatment of incipient cataract with subconjunctival injections of mercuric cyanid we hope to benefit some patients by staying the progress of the opacity. We must take the cases before the opacity is well advanced. In all of our cases we gave a hypodermic of morphin half an hour before giving the injection. After anesthetizing the conjunctiva, I grasp it with a fixation forceps and plunge the needle deeply into the orbit midway between the external and superior recti muscles. The pain is considerable, but usually subsides in two or three hours. The chemosis is intense, and even the eyelids and face sometimes puff up, until it is impossible to open the lids wide enough to see the eyeball. This swelling subsides in the course of a few days, without harm to any of the tissues. The strength of the solution used is 1:4,000; 20 minims is the dose usually used. When the opacity is well advanced one fails to get results. In none of my cases has the opacity advanced in the eyes treated, while in the fellow eye vision has failed in all cases that were not already blind. In one case the eye seemed to become myopic as the results of the treatment, while in another case the myopia was increased.

DISCUSSION

DR. ALBERT E. BULSON, JR., Fort Wayne: I have never used subconjunctival injections of mercury in incipient cataract, and do not think I ever shall. Colonel Smith has been using the treatment in a class of cases different from those we see in this country. Persons in India develop cataract at a much earlier age, when their physical condition is much better, and they can stand pain better. Cataract is not an infective condition; it is a disturbance of the nutrition of the lens. I fail to see how the subconjunctival injections of mercuric cyanid will have any effect, because the principal effect of mercury is in its action on an infective process, although it does have a certain effect in stimulating, perhaps, the reparative process. Subconjunctival injections of dionin have a very decided effect on the absorption of various opacities of the vitreous, aqueous humor and lens. I am not in favor of the use of subconjunctival injections of mercuric cyanid in cases of incipient cataract.

DR. A. B. KNAPP: The reaction in some cases is, of course, much greater than in others. This treatment is entirely new and will bear further investigation, but I feel that it should be tried. There is no age limit to its use. I would not fear to use it in any case in which I would feel safe in giving a hypodermic of $\frac{1}{4}$ grain of morphin.

(To be continued)

The Unity of Progress.—Remarkable achievements are never unique occurrences in nature. Even the greatest men rest on the shoulders of a large multitude of smaller ones who have preceded them; and epochal discoveries emerge out of a period of intellectual restlessness that affects many minds.—Flexner.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Medical Sciences, Philadelphia

October, CXLVIII, No. 4, pp. 469-624

- 1 *Clinical Value of Expectorants. J. L. Miller, Chicago.
- 2 *Relative Pulmonic Insufficiency. J. N. Hall, Denver.
- 3 Prevention and Treatment of Vulvovaginitis in Children. F. J. Taussig, St. Louis.
- 4 Direct Examination of Duodenal Contents (also Bile) as an Aid in Diagnosis of Gall-Bladder and Pancreatic Affections. M. Einhorn, New York.
- 5 *Disseminated Sclerosis. J. Collins, New York, and E. Baehr, Cincinnati.
- 6 Case of Sprengel's Deformity. G. Fetterolf and J. H. Arnett, Philadelphia.
- 7 Treatment of Amebic Dysentery. G. M. Niles, Atlanta, Ga.
- 8 Diagnosis of Tuberculosis in Early Life. H. R. M. Landis and I. Kaufmann, Philadelphia.
- 9 Difference in Morphology of Blood in Gastric Ulcer, Duodenal Ulcer and in Chronic Appendicitis. G. A. Friedman, New York.
- 10 *Myopathy: Eight Cases Comprising Various Types. T. J. Orbison, Los Angeles.
- 11 Use of Pituitary Extract in Control of Some of Associated Symptoms of Pneumonia Which Favor Hypotension. A. A. Howell, Philadelphia.
- 12 Traumatic Neurosis. T. A. Williams, Washington, D. C.
- 13 Granuloma Fungoides. M. G. Wohl, Philadelphia.

1. **Clinical Value of Expectorants.**—Ammonium carbonate and ammonium chlorid and the emetic group of expectorants, as apomorphin and ipecac, when given in sufficiently large doses to animals, Miller says, increase bronchial secretion. Ammonia salts per os in moderate doses equivalent to 2 mg. in an adult man, do not increase bronchial secretion in the dog. Apomorphin and emetin when given to dogs in doses considerably greater than the ordinary therapeutic dose for man do not excite increased bronchial secretion.

2. **Relative Pulmonic Insufficiency.**—Hall suggests that relative pulmonary insufficiency may be found in possibly 3 to 5 per cent. of cases of mitral stenosis. The diagnosis rests on the association of the following findings: 1. Some definite cause for increased pulmonary tension, notably mitral stenosis or fibroid phthisis in an advanced state. 2. The presence of increased precordial area of dulness, especially suggesting dilatation of the right ventricle. 3. The presence of a soft diastolic murmur heard at the region of the pulmonary valves, and transmitted downward from the second or third left intercostal space along the left side of the sternum. The murmur is exactly of the type found in aortic regurgitation, excepting that it is generally more soft and blowing. The most striking single feature is its inconstancy. After being present for days or weeks, with the regaining of a better condition of compensation the murmur disappears, to reappear with the next breakdown. It is absolutely essential to the diagnosis that the aortic valve sounds be clear and that no feature of aortic regurgitation be present. Fortunately, the insufficient filling of the left ventricle in mitral stenosis oftentimes renders the aortic second sound so notably feeble that the pulmonary signs are prominent by contrast.

4. **Absence of thrill.** This is not infrequent in the organic lesion, but is never found in relative insufficiency, and should therefore count against such a diagnosis. The presence of a systolic murmur at this orifice would militate against the diagnosis of relative leakage and be in favor of the organic type. 5. The murmur may be increased in intensity by expiration, especially with the closed glottis, the increased intrapulmonary pressure being the active agency in bringing about the exaggeration of the murmur. A similar increase may be noted after exertion. As is to be expected, the pulmonary second sound is commonly enfeebled by the failure of close apposition of the pulmonic leaflets.

5. **Disseminated Sclerosis.**—Disseminated sclerosis, according to Collins and Baehr, is encountered much less frequently in this country than abroad. This is due, in part only, to the fact that early and irregular cases frequently escape recognition here. The fully developed, classical Charcot type of the disease is rarely seen. Trauma, including occupation, injury, intoxications, biologic crises, mental shocks, etc.,

play only a contributing rôle in the development of the disorder. The disease is regarded by the authors to be a parenchymatous degeneration due to the action of a toxin circulating in the cerebrospinal fluid. There can be no rigid grouping of "types" of the disease. Nevertheless, three general groups can be assumed; a spastic-paretic, an ataxic and a hemiplegic group. The best single aid in the differential diagnosis is the condition of the cerebrospinal fluid. The Wassermann reaction is practically always negative. The number of lymphocytes is less than fifteen, and there is not excess of globulin. This is of special value in ruling out cerebrospinal syphilis. The remissions which sometimes occur are singularly characteristic of this disease. In their series, however, they were rarely encountered. The absence of the abdominal reflexes, upper and lower, is an important diagnostic sign.

10. **Myopathy.**—Among the eight cases cited by Orbison is one of myopathy in a colored person. In this case there has been an arrest of the condition for over a year. The electrical reactions in every case were a very much delayed response to the faradic interrupted current in the affected muscles. Two of the patients were brothers, but in no other case was the familial element present. In none of them was there a history of heredity. The exhibition of electricity was distinctly beneficial in at least one case. Little or nothing that was elicited in these cases could be considered in the light of an etiologic factor except muscle strain in one case and general exposure in another.

American Journal of Physiology, Baltimore

October, XXXV, No. 3, pp. 265-366

- 14 Viscosity of Blood on Inhalation of Alcohol. R. Burton-Opitz, New York.
- 15 *Factors of Influence in Origin and Circulation of Cerebrospinal Fluid. C. H. Frazier and M. M. Peet, Philadelphia.
- 16 *Extirpation of Testes and Vasomotor Irritability. H. Wheelon, Chicago.
- 17 Cause of Phase Difference Frequently Between Homonymous Peaks of Electrocardiogram. H. B. Williams, New York.
- 18 Blood and Urinary Amylase. C. E. King, Chicago.
- 19 Effect of Filtration Through Berkefeld Filter on Coagulability of Oxalated Plasma. C. H. Goddard, Baltimore.
- 20 *Is Contraction of Smooth Muscle Accompanied by Heat Production? C. D. Snyder, Baltimore.
- 21 *Effect of Intramuscular Injection of Pituitary Extract on Secretion of Milk in Human Subjects. R. L. Hill and S. Simpson, Ithaca, N. Y.

15. **Origin and Circulation of Cerebrospinal Fluid.**—The problem of absorption and secretion has been elucidated somewhat by the production of artificial hydrocephalus, so that it can be demonstrated without question. Frazier and Peet state, that the cerebrospinal fluid is almost, if not entirely, secreted within the ventricles, and that absorption does not take place until the fluid has escaped. The lateral ventricle, therefore, is, as the bladder, merely a receptacle for the storage fluid. Comparing the results of phthalein injection with and without obstruction of the lateral ventricles, it has been possible to elaborate a method for the differentiation of different types of hydrocephalus from the point of view of etiology. The cerebrospinal pressure has been found to vary with the pressure of the venous sinuses and to be practically identical with it. Under normal conditions there are certain oscillations which are due to the effect of inspiration and expiration on venous pressure, but they may be arrested by slight increase of intracranial tension. Closure of the carotid circulation causes an immediate but only transitory fall of cerebrospinal pressure, but obstruction of the venous circulation is followed by an increase in pressure more or less constant.

The normal rate of secretion was found to vary widely under normal conditions and was practically uninfluenced by such profound circulatory disturbances as complete closure of both common carotid arteries. The propriety of ligation of the common carotid arteries, recommended and practiced in cases of hydrocephalus, has not been established by exact laboratory methods.

The absorption of cerebrospinal fluid is largely by the venous channels. Lymphatic absorption is roundabout, slow and relatively diminutive. By the phthalein test, it was proved that from 50 to 60 per cent. is absorbed within two

hours. Within two minutes of an injection of phthalein into the lateral ventricles, the drug may be recovered from the blood in the torcular herophili. Absorption was found to be chiefly via the venous channels, so that obstruction to the venous outflow is immediately followed by a rise in venous pressure, by the accumulation of cerebrospinal fluid, and a resulting increase in intracranial tension.

16. Influence of Testes on Blood-Pressure.—Wheelon found by experimentation that removal of the testes is followed by a slight fall in blood-pressure, while vasomotor reactions to epinephrin remain unchanged. Blood-pressure reactions to nicotine are constantly lowered as a result of gonadectomy, therefore, the effects of castration are on the sympathetic nervous system proper. The lowered irritability of the sympathetic system may partially account for the dispositional changes in castrated dogs. Incomplete data indicate that irritability of the sympathetic nervous system is increased in castrated dogs by the presence of testicular transplants. It is, therefore, concluded by Wheelon that a relationship exists between the normal functioning testes and irritability of the sympathetic nervous system proper.

20. Heat Production in Smooth Muscle.—When stimulating smooth muscle indirectly the results obtained by Snyder were uniformly constant in the absence of any measurable amounts of heat production accompanying development of tension. When stimulating by the direct method, by the same apparatus, development of tension in smooth muscle was accompanied now with positive heat changes, now with negative heat changes. But the same apparatus when measuring heat changes in dead muscles (heated electrically), or in live cross-striated muscle stimulated directly gave quite uniform and positive results.

21. Effect of Pituitary Extract on Secretion of Milk.—In a young, healthy, married woman, nursing her second baby, in the fifth month of lactation, the injection of 1 c.c. of pituitrin, equivalent to 20 mg. of dried infundibular portion of the gland, was followed, in ten minutes, by a marked increase in the amount of milk secreted. After a latent period of from twenty to thirty seconds the mother could feel the milk "coming into the breasts," and a few minutes later abdominal pains were experienced, presumably due to increased intestinal peristalsis. The milk withdrawn after injection was rich in fat, the average figure for the three experiments being 5.5 per cent. as compared with 3.4 per cent. for three days when no pituitrin was administered. In the milk yielded twenty-four hours after injection the fat content was still somewhat above the normal. Although no quantitative estimations were made, judging from the mother's experience in nursing the child, Hill and Simpson believe that the quantity of milk obtainable by it on the morning after the injection was diminished.

American Journal of Roentgenology, Detroit

July, I, No. 9, pp. 331-360

- 22 *New Applications of Artificial Pneumothorax as Therapeutic Measure. K. Dunham, Cincinnati.
23 *Indications Afforded by Roentgen Rays for and Against Operations on Stomach. Results Obtained from Such Operations. A. H. Pirie, Montreal.

22 and 23. Abstracted in THE JOURNAL, Nov. 8, 1913, pp. 1743 and 1744.

Annals of Surgery, Philadelphia

October, LX, No. 4, pp. 409-536

- 24 Principles of Operative Treatment of Diseases of Large Intestine. W. A. Oppel, St. Petersburg.
25 Primary Sarcoma of Lower End of Femur Involving Synovial Membrane. S. F. Jones and R. C. Whitman, Denver.
26 Treatment (Fibrolysin) for Old Contracted Cicatrices. E. G. Alexander, Philadelphia.
27 *Laminectomy for Spinal Tumor. C. A. Elsberg, New York.
28 Aneurysm of Sciatic Artery. R. C. Bryan, Richmond, Va.
29 Case of Disappearance of Recurrent Mammary Carcinoma After Removal of Ovaries. F. Torek, New York.
30 Injuries of Great Toe Sesamoids. K. Speed, Chicago.
31 *Free Transplantation of Fascia Lata. A. T. Mann, Minneapolis.
32 Analysis of Treatment of Fracture of Neck of Femur. R. Whitman, New York.
33 Flashlight Autochrome Photography of Pathologic Subjects. H. H. Hart, Baltimore.

27. Laminectomy for Spinal Tumor.—In Elsberg's experience the danger of a laminectomy for spinal neoplasm is

small; the results that may be expected from the removal of intramedullary tumors of the cord are fairly good, if the tumors are well localized and will extrude; the results from the removal of extramedullary growths are very satisfactory if only the patients come to operation early enough, before irreparable damage has been done to the cord.

31. Free Transplantation of Fascia Lata.—Mann urges the use of transplanted fascia in the routine of practical surgical work, to add strength and to supply defects in ventral and inguinal hernia. Plastic flaps in these cases can do much, but often they can be greatly strengthened or can be replaced by a strong fascial transplant such as may easily be taken from the iliotibial band of the fascia lata.

Archives of Pediatrics, New York

September, XXXI, No. 9, pp. 641-720

- 34 Some Points of Contact Between Tuberculosis Work and Pediatrics. W. C. White, Pittsburgh.
35 *Endocarditis in Children. F. M. Crandall, New York.
36 Spasmophilia. H. Reye, Ann Arbor, Mich.
37 Psychopathic Child. F. J. Farnell, Providence, R. I.
38 Chronic Infective Endocarditis. E. C. Jones and B. M. Meine, Philadelphia.
39 *Caloric Value of Diets of Sick Infants. J. C. Gittings, Philadelphia.
40 Hemimelia Thoracica. F. L. Wachenheim, New York.
35. Abstracted in THE JOURNAL, June 20, p. 1989.
39. Abstracted in THE JOURNAL, July 4, p. 55.

Boston Medical and Surgical Journal

October 8, CLXXI, No. 15, pp. 545-580

- 41 Epidemic of Paratyphoid at Boston State Hospital, 1910. M. M. Canavan, Boston.
42 Clinical Features of an Outbreak of Paratyphoid. M. E. Gill-Noble, Boston.
43 Blood-Cell Picture in Paratyphoid and After Vaccination with Bacillus Typhosus. M. M. Canavan, Boston.
44 Relation of Paratyphoid to Antityphoid Vaccination. M. M. Canavan, Boston.
45 Conclusions from Work on Paratyphoid Epidemic at Boston State Hospital, 1910. E. E. Southard, Boston.
October 15, No. 16, pp. 581-620
46 Roentgenologic Consideration of Relation of Individual Type to Intestinal Stasis. P. Brown, Boston.
47 Study of Cancer. S. W. Little, Rochester, N. Y.
48 Gunshot and Bayonet Wounds of Stomach. C. G. Cumston, Geneva, Switzerland.
49 Several Practical Features Associated with Management and Treatment of Obscure Arthritis. H. W. Marshall, Boston.
50 Thyroid Operations Under Local Anesthesia. F. H. Lahey, Boston.

Canadian Medical Association Journal, Toronto

October, IV, No. 10, pp. 853-948

- 51 Vascular Crises and Angiospasm. A. Birt, Halifax, N. S.
52 *Paroxysmal Tachycardia. W. F. Hamilton, Montreal.
53 Investigations of Semicircular Canals and Their Clinical Applications. D. H. Ballon, Montreal.
54 Medical Profession of Alberta and Defense of Country. L. Drum, Ottawa.
55 National Defence and Medical Profession. S. W. Hewetson, Calgary, Alta.
56 Antityphoid Inoculation at Winnipeg General Hospital. S. J. S. Peirce, Winnipeg, Man.
57 Subtrochanteric Fracture of Femur. W. G. Anglin, Kingston.
58 Case of Tetanus. Treated by Phenol Injections. Recovery. J. T. Fotheringham, Toronto.

52. Paroxysmal Tachycardia.—While the 4 cases reported by Hamilton terminated fatally, one patient seems to have been helped by taking large doses of nux vomica. At all events the interval between attacks was lengthened during treatment. While the attacks were brief they seemed trifling; but with short intervals and protracted tachycardia, to say nothing of advancing age, the gravity increased. The treatment, Hamilton says, resolves itself, therefore, in many cases into the treatment of such conditions after the normal rate is approached or reached.

Colorado Medicine, Denver

September, XI, No. 9, pp. 327-360

- 59 *Some of Professional Responsibilities of Physicians of Colorado. O. M. Gilbert, Boulder.
60 Some Recent Contributions in Field of Microbiology. H. Noguchi, New York.
61 Two Cases of Sphenoid Disease with Brain Symptoms. A. R. Solenberger, Colorado Springs.
59. Abstracted in THE JOURNAL, October 3, p. 1229.

Delaware State Medical Journal, Wilmington

August, V, No. 9, pp. 1-26

- 62 Surgery for Handicapped Patient. W. E. Bird, Wilmington.

Iowa State Medical Society Journal, Washington

October, IV, No. 4, pp. 271-345

- 63 Benign Tumors of Breast. O. J. Fay, Des Moines.
 64 Malignant Tumors of Breast. D. C. Brockman, Ottumwa.
 65 Elephantiasis. Report of Case. C. L. Campbell, Atlantic.
 66 Pellagra. A. H. Jastram, Remsen.
 67 Adhesive Complications of Right Abdomen. M. Emmert, Atlantic.
 68 Brain Localization. E. M. Williams, Sioux City.
 69 Cancer of Uterus. C. S. James, Centerville.

Journal of Experimental Medicine, Lancaster, Pa.

October, XX, No. 4, pp. 321-432

- 70 *Relation of Bacteriolysis to Proteolysis. J. W. Jobling and W. Petersen, New York.
 71 *Chemistry of Serous Effusions. A. A. Epstein, New York.
 72 Pneumococcus Hemotoxin. R. Cole, New York.
 73 *Production of Methemoglobin by Pneumococci. R. Cole, New York.
 74 *Rôle of Spleen in Blood Formation. D. H. Morris, New York.
 75 *Immunization of Animals with Bacterial Proteotoxins (Anaphylatoxins). H. Zinsser and J. G. Dwyer, New York.
 76 *Rôle of Lymphoid Tissue in Resistance to Experimental Tuberculosis in Mice. J. B. Murphy and A. W. M. Ellis, New York.
 77 *Cause of Localization of Secondary Tumors at Points of Injury. F. S. Jones and P. Rous, New York.
 78 Greater Susceptibility of an Alien Variety of Host to an Avian Tumor. P. Rous and L. B. Lange, New York.
 79 Immunity to Transplantable Chicken Tumors. P. Rous and J. B. Murphy, New York.

70. Relation of Bacteriolysis to Proteolysis.—According to Jobling and Petersen there is no demonstrable increase in non-coagulable nitrogen during bacteriolysis. Bacteria treated with immune serum and complement are so altered that they are more readily digested by trypsin. Bacteria treated with complement alone become more resistant to proteolysis. Bacteria treated with an excess of immune serum and complement become more resistant to proteolysis.

71. Chemistry of Serous Effusions.—The fluids subjected to analysis by Epstein are grouped according to the following scheme, which is based on clinical data: 1. Cutaneous effusions: (a) nephritic and (b) cardionephritic. 2. Pleural effusions: (a) inflammatory and (b) non-inflammatory including (1) nephritic, (2) cardiac, (3) cardionephritic and (4) new growth. 3. Abdominal effusions: (a) inflammatory, tuberculous and (b) non-inflammatory, including (1) new growth, (2) cirrhosis of the liver, (3) cardiac and (4) cardionephritic. 4. Hydrocele fluid. A comparison of the results obtained shows that the effusions vary, (1) according to location, and (2) according to the disease in which they are produced. Thus the subcutaneous effusions are totally different in their composition from the abdominal or pleuritic fluids; and again the abdominal fluid of nephritic origin is different from those of cardiac or other origin.

The cutaneous effusions are characterized by a low protein content and a small amount of incoagulable nitrogen. Of the protein present in these fluids, the globulin constitutes the greater portion. In the mixed cardionephritic fluids the ratio of globulin to albumin is lower than that in normal blood-serum; but when compared with the blood-serums of cardionephritic cases there appears to be a certain parallelism. The chlorid content of these fluids is considerably above that found in normal blood-serum, but is comparable with those of corresponding cases. The effusions occurring in serous cavities differ from the cutaneous ones by their higher protein content. The highest values are attained in the pleural fluids, in which the protein present is almost the same as that in normal blood-serum. The incoagulable nitrogen in these fluids is uniformly low. The chlorids vary in amount according to the nature of the case. In the effusions of inflammatory origin the values are lower than those found in the blood. In the pleural fluids of other than inflammatory origin the chlorid content is either the same or higher than that of blood-serum. The globulin-albumin ratio in all of these fluids is higher than that of normal blood-serum. The abdominal fluids in general are less rich in protein than the pleural effusions. Those of cardiac origin give the highest protein values, but the globulin-albumin ratios are lower than in the pleural fluids or in the blood-serums of corresponding

cases. The results obtained in the analysis of abdominal fluids from cardionephritic cases approach very closely those obtained in purely cardiac cases.

73. Production of Methemoglobin by Pneumococci.—Cole found that living pneumococci in contact with hemoglobin transform this into methemoglobin. The reaction does not occur when hemoglobin is added to an emulsion of washed pneumococci in salt solution. However, if minute traces of dextrose be added to such a mixture, the reaction quickly occurs. The dextrose may be replaced by any one of a number of other sugars, and also by certain other organic substances, if the latter are added in large amounts. The reaction does not occur in the absence of oxygen. If the free oxygen be first removed, and then replaced, the reaction occurs more rapidly than if the oxygen had not been removed. The presence of free oxygen in excess slightly delays the reaction, possibly because of the inhibition of the reduction process which forms the first part of the reaction. The explanation of this phenomenon of methemoglobin production is not only of importance so far as this special reaction is concerned, but also because it suggests an explanation for the manner in which pathologic effects are produced by those bacteria which apparently produce no soluble toxin.

74. Rôle of Spleen in Blood Formation.—Morris examined carefully the blood entering the spleen and compared it with that emerging by the splenic vein. His results all point to the inevitable conclusion that the spleen is a blood-forming organ of prime importance in the animal metabolism. The fact that the organ can be extirpated without causing death or even considerable detriment to the animal organism does not militate against this conclusion. Other organs (hemo-lymph nodes, bone marrow, and adenoid tissues in general) may assume part of the rôle of the spleen when this is absent, but only the severity of the blood-destroying agent and the individual resistance can determine whether the body can stand the strain when deprived of the spleen. Cases of death from removal of the malarial spleen indicate this strongly.

75. Immunization of Animals.—The authors' experiments show that guinea-pigs, once injected with sublethal doses of bacterial proteotoxins (anaphylatoxins), acquire distinct tolerance to these poisons. The degree to which such resistance or tolerance is developed is never high, in no case exceeding the ability to withstand one and one-half to twice the fatal dose of the poisons. During the three or four days immediately following the first injection the animals appear to be slightly less resistant than are normal controls, this depending probably on the injury done by the administered poison. Tolerance begins to be evident after from four to seven days, seems to be most highly developed in about two weeks, but lasts in a diminishing degree for at least as long as sixty days.

76. Resistance to Experimental Tuberculosis in Mice.—Murphy and Ellis state that mice either normal or splenectomized after exposure to the Roentgen ray are markedly more susceptible to bovine tuberculosis than are normal animals. Animals splenectomized a short time prior to inoculation are also more susceptible than normal, while those splenectomized eight to ten days before inoculation have about the same resistance as normal. The mice splenectomized three to four weeks before inoculation have a resistance increased over the normal, as has already been shown by Lewis and Margot. As Roentgen ray in the doses used apparently affects only the lymphoid tissue and as the hypertrophy of the remaining lymphoid tissue after splenectomy is so rapid that the circulating lymphocytes may be much above the normal by the third week, it is concluded that this evidence, taken with the well-known association of the lymphocytes with tuberculous lesions, points strongly to the lymphocyte as an important agent in the defensive mechanism against tuberculosis.

77. Localization of Secondary Tumors.—Jones and Rous found that the injection of a suspension of mouse tumor into a healthy peritoneal cavity has little success as a rule compared with a similar injection into the subcutaneous tissue. They found that the resistance of the peritoneal lining thus

indicated can be abolished largely if not completely by the preliminary injection of a mechanical irritant (lycopodium). That the change thus brought about is independent of general immunity phenomena is shown by the fact that a local injury renders susceptible the part of the peritoneum immediately affected and that part only. Special tests show that the factor important in rendering the peritoneum more susceptible is the injury to the subendothelial connective tissue. Susceptibility persists after the endothelium has regenerated over the reacting connective tissue.

Schmidt found that the cells of tumor emboli in the pulmonary arterioles are able to penetrate the endothelium of the vessel only after they have been provided with a stroma from the subendothelial connective tissue. Jones and Rous claim that a connective tissue highly cellular and perhaps still proliferating as the result of injury may well elaborate the stroma for a tumor more rapidly than normal connective tissue. Tests of growth in vitro support this idea. Connective tissue reacting to an injury grows profusely and almost immediately when incubated in plasma, whereas normal tissue from the same region shows usually no growth whatever. Dead tumor fragments in contact with the peritoneum cause a change favorable to the lodgment and growth of later tumor fragments.

Jones and Rous suggest that it seems not improbable that the peritoneal dissemination of certain human neoplasms may be accomplished indirectly through the death of the first tumor fragments cast off. They conclude that the secondary localization of tumors at points of injury may be attributed with good reason to the presence at such points of an active connective tissue capable of elaborating a stroma rapidly and abundantly. For it is the proliferation of the subendothelial connective tissue to form a supporting stroma that determines the fate of free tumor cells, whether these lie on the peritoneum or within a vessel.

Lancet-Clinic, Cincinnati

October 10, CXII, No. 15, pp. 385-412

- 80 Effects of Alcohol and Tobacco on Life Expectancy. T. D. Crothers, Hartford, Conn.
- 81 Recognition of Defensive Ferments in Urine. B. Holmes, Chicago.
- 82 Applied Physical Chemistry in Heart Disease. J. Aulde, Philadelphia.
- 83 Whitehead Operation for Hemorrhoids. C. E. Caldwell, Cincinnati.
- 84 Light: Its Use and Abuse. J. Ranly, Cincinnati.

Medical Record, New York

October 17, LXXXVI, No. 16, pp. 657-698

- 85 Means by Which Infectious Diseases Are Transmitted and Disinfection. A. H. Doty, New York.
- 86 Chronic Mucous and Membranous Colitis. G. M. Linthicum, Baltimore.
- 87 Roentgenographic Diagnosis of Enlargement of Thymus. D. B. Delavan, New York.
- 88 Alcoholism as Factor in Disease. D. Carter, New York.
- 89 Diagnosis of Typhoid. G. A. Rueck, New York.
- 90 Syringomyelia; Report of Case of Morvan's Type of Disease. H. V. Wildman, Jr., New York.
- 91 Rhinolith of Several Years' Duration in Child of Eight. B. Joseph, New York.

86. Chronic Mucous and Membranous Colitis.—The neurotic theory of these conditions is upheld by Linthicum. He has adopted a method of treatment which, he says, has given him very encouraging results in all cases in which there were no outside factors in the abdominal cavity which would keep up an irritation of the colon or rectum, or in which it was secondary to heart, liver or kidney involvement. The method used in treating these cases has been by fuming crystals of iodine, or one of its salts, forcing the fumes into the rectum and colon with slight pressure. The apparatus consists of an ordinary 500 c.c. Florence flask, with a double perforated rubber stopper connected with pressure tank or bulb on one side, the glass tube entering into and extending to about 2½ cm. from the bottom of the flask, an exit being provided by a right angle glass tube with its inside end close to the top. The exit is connected with a short glass tip by a rubber tube about 25 cm. long. The patient, if a man, is placed in the knee-chest position and, the proctoscope being introduced, the gas is blown through it into the bowels until the patient complains of cramps or too much distress. (If the patient is a woman she is placed in the Sims position.) The air is then

allowed to escape and the insufflation is repeated, so that altogether the vapor from 2 gm. of iodine crystals or 1½ gm. of iodoform, is used. The iodine is fumed by means of a small electric stove, placed under the flask; a bunsen burner or an alcohol lamp can be used.

The glass tip inserted through the anus a few centimeters may be used without the use of the proctoscope in cases in which the patients grow weary of its insertion; but the proctoscope aids dilatation. In the early stages of the disease this treatment is given each day for a period of ten days, and then at less frequent intervals so that the treatment extends over a period of six to eight or twelve weeks. The result has been that the constipation was relieved and the patient had regular normal stools. The mucous membrane assumed a more nearly normal appearance, and the mucous secretion ceased. The preliminary treatment before the injection consists of the patient irrigating his bowels thoroughly, so that he presents a clean intestine each time before his regular treatment.

New York Medical Journal

October 10, C, No. 15, pp. 697-744

- 92 Technic of Spinal Anesthesia. W. W. Babcock, Philadelphia.
- 93 Continuous Uterine Drainage. A. E. Gallant, New York.
- 94 Cervical Adenitis. N. P. Stauffer, Philadelphia.
- 95 Present Status of Verumontanum in Deep Urethral Diseases. J. A. Hawkins, Pittsburgh.
- 96 Acquired Organic Hour-Glass Stomach. G. A. Humphreys, New York.
- 97 Modern Treatment of Bright's Disease. J. Herold, New York.
- 98 Substitution Reactions. C. P. Oberndorf, New York.
- 99 Gonorrheal Stomatitis. H. J. Farbach, Louisville, Ky.
- 100 Present Status of Functional Liver Tests. E. B. Krumbhaar, Philadelphia.

October 17, No. 16, pp. 745-796

- 101 Implantation of Generative Glands and Its Therapeutic Possibilities. G. F. Lydston, Chicago. (To be continued.)
- 102 Case of Heteroplastic Grafting of Testicle. R. T. Morris, New York.
- 103 Gunshot Wounds of Spine. C. G. Cumston, Geneva, Switzerland.
- 104 Median Bar Obstruction in Prostatic Disease. Report of Case. J. D. Whitall, Philadelphia.
- 105 Was the Engineer's Mind Impaired by Alcohol? T. D. Crothers, Hartford, Conn.
- 106 Localization of Brain Lesions. H. Crenshaw, Atlanta, Ga.
- 107 Nasopharyngoscope in Treatment. T. J. Harris, New York.
- 108 Alleged Tuberculosis Cures on the Market. F. P. Morgan, Washington, D. C.
- 109 Tropeolin as an Indicator for Gastric Acidity. F. W. Rolph, Toronto, Canada.
- 110 Purpura Hemorrhagica Treated with Horse-Serum. J. M. Bodenheimer, Shreveport, La.

93. Continuous Uterine Drainage.—Normally, Gallant states, the menstrual blood condenses in the passive uterus, escapes drop by drop, or trickles from the os externum in a bright red, intermittent stream, without malaise, pain, headache, or any sort of reflex manifestation. Obstruction to the free outflow may be caused by fibrosis, cicatrization, flexure, neoplasm of any portion of the cervical canal or involving the lower uterine zone. Obstruction is primarily an intermenstrual condition, which (a) causes retention of mucus, etc., within the uterus; (b) retards the outflow of menstrual blood; and (c) shuts in the dangerous remnants after abortion, miscarriage, and labor, and the gonococcus. Obstruction excites the uterus to laborlike activity, brings about hypertrophy of its wall, enlargement of its cavity, increased weight, and an abnormal condition of its mucous membrane. Obstruction during menstruation causes colicky cramps, laborlike pains, backache, headache, and other reflex pains; (b) obstruction during labor causes serious dystocia; (c) obstruction after labor induces after-pains, facilitates infection, and favors subinvolution; (d) obstruction between periods, intermenstrual, forces infection into the tubes and peritoneum, and results in peritonitis, tubal gestation, hydrosalpingitis and pyosalpingitis, and, by thus obstructing the tubes, is the most common cause of sterility, and frequently is at the bottom of marital infelicity, leading to the divorce courts and the hospital, and if the woman escapes with her life, she will be compelled to live an aphoric life, subsisting on the alimony which the courts offer as her only means of redress. Obstruction in young or older women can be and should be remedied, by dilatation, drainage, replacement, pessary support, or suspension of the uterus.

Continuous efficient drainage can be secured only by the use of a drain which will permit the cervical mucus to pour into the drain, mingle with the secretions, and prevent clotting and plugging. To prevent recontraction of the internal os, reflexure of the antelexion, the drain must be of rubber, fenestrated or perforated, sutured in the cervix and must remain *in situ* for six or more months. Experience teaches that, except for the removal of detached secundines or placenta, curettage is unwise and can therefore be dispensed with.

To secure uninterrupted drainage from the uterine cavity in acute cases, Gallant advises that a gauze roll wick should be placed in the vagina, with its upper end under the drain and the lower end projecting through the vulva so as to come in actual contact with the vulva pad, otherwise pus will collect in the vagina and sapremia will result.

110. Purpura Hemorrhagica Treated with Horse Serum.—In Bodenheimer's case good results were obtained from this treatment. Ten c.c. of horse serum were administered intramuscularly. Calcium lactate in 2 grain doses every two hours, and gelatin and orange juice freely, was administered by mouth. The hemorrhagic blisters in the mouth, which on close inspection proved to be gangrenous, showed a marked improvement in twenty-four hours after the administration of the horse serum; in fact, they acted as remarkably as the diphtheritic membrane does after the administration of diphtheria antitoxin. The epistaxis ceased, but the bloody stools continued. In forty-eight hours the blisters or gangrenous spots in the mouth, which had been at least $\frac{1}{2}$ of an inch in diameter, were practically well. The bloody stools continuing 10 c.c. more of horse serum was administered and the treatment by mouth continued.

The stools were markedly improved in the next twenty-four hours, and after two or three days were normal. The treatment by mouth was continued for a week and the child carefully nourished. She was watched for some time, but up to the present, three months having passed, there has been no return of symptoms.

She had the not unusual urticaria ten days after the serum administration, but outside of the usual parental alarm and discomfort to the patient, the recovery was uneventful.

New York State Journal of Medicine

October, XIV, No. 10, pp. 471-511

- 111 Diagnosis of Nervous Diseases. C. L. Dana, New York.
- 112 Some Manifestations of Influenza in Young Children. L. E. Holt, New York.
- 113 Recurrent Bronchitis in Children. C. G. Kerley, New York.
- 114 Effect on Subsequent Labors of Operations for Uterine Displacements. G. W. Kosmak, New York.
- 115 Experimental Study of Ocular Anaphylaxis. M. J. Schoenberg, New York.
- 116 Effects of Sugars on Gastric Secretions in Infants. D. H. Sherman and H. R. Lohnes, Buffalo.

Northwest Medicine, Seattle, Wash.

October, VI, No. 10, pp. 291-324

- 117 Sliding Hernia. P. Rockey, Portland, Ore.
- 118 Value of Nerve Blocking in Prevention of Surgical Shock. E. O. Jones, Seattle.
- 119 Conservation of Vision. J. L. McCool, Portland, Ore.
- 120 Extension Treatment of Fractures of Neck of Femur in Reference to Its Occurrence in Elderly Subjects. J. A. Pettit, Portland, Ore.
- 121 Appendicitis in Early Childhood. J. B. Manning, Seattle.
- 122 Diagnosis in Early Stages of Urinary Tuberculosis. G. S. White-side, Portland, Ore.

Ohio State Medical Journal, Columbus

October, X, No. 10, pp. 575-646

- 123 Sex Hygiene an Educational Problem. H. Jones, Circleville.
- 124 Case of Abnormal Fetus. W. A. Cromley, Palestine.
- 125 Diagnosis and Prognosis of Insanities. E. E. Gaver, Columbus.
- 126 Mental Symptoms Due to Brain Tumor. W. B. Laffer, Cleveland.
- 127 Practical Value of Routine Bacteriologic Examinations of Conjunctiva. W. H. Snyder, Toledo.
- 128 Operative Aspects of Certain Static Foot Troubles. A. H. Freiberg, Cincinnati.
- 129 Atrophic Rhinitis with Ozena: Etiology and Surgical Treatment. H. B. Harris, Dayton.

Oklahoma State Medical Association, Muskogee

October, VII, No. 5, pp. 139-171

- 130 Prognosis and Treatment of Injuries of Central Nervous System with Reference to Trauma. R. Grosshart, Tulsa.
- 131 Surgery and Prognosis of Gall-Bladder and Ducts. H. A. Lile, Aline.

- 132 Headache of Nasal Origin. E. F. Davis, Oklahoma City.
- 133 Early Diagnosis of Insanity. A. A. Thurlow, Norman.
- 134 Spinal and Local Anesthesia in Gynecologic and Obstetric Surgery. E. L. Gilcreest, Gainesville, Tex.

Ophthalmic Record, Chicago

October, XXIII, No. 10, pp. 487-540

- 135 Case of "Squirrel Plague" Conjunctivitis in Man. D. T. Vail, Cincinnati.
- 136 Treatment of Earlier Stages of Senile Cataract. H. Smith, Amritsar, India.
- 137 Historic Data Concerning Glasses. E. Hill, Chicago.

Surgery, Gynecology and Obstetrics, Chicago

October, XIX, No. 4, pp. 427-554

- 138 *Internal Derangements of Knee. R. Jones, England.
- 139 Operative Treatment of Ankylosis of Mandible. V. P. Blair, St. Louis.
- 140 Treatment of Inoperable Carcinoma of Uterus by Application of Heat. J. F. Percy, Galesburg.
- 141 Results of Radical Operative Treatment of Cancer of Uterus. T. Wilson, England.
- 142 *Ulcer of Stomach in Children Before Puberty. C. D. Lockwood, Pasadena, Cal.
- 143 *Postoperative Pleurisy with Effusion and Empyema. A. C. Burnham, New York.
- 144 Intestinal Obstruction Due to Cancer of Colon. A. McGlannan, Baltimore.
- 145 Strictures of Gall-Bladder. J. E. Else, Portland, Ore.
- 146 Inversion of Uterus. M. J. Buck, Pittsburgh.
- 147 Case of Sporotrichosis. B. F. Davis, Chicago.
- 148 *Spinal Anesthesia in Gynecology. G. Gellhorn, St. Louis.
- 149 *Study of End-Results of Interposition of Uterus. J. O. Polak, Brooklyn.
- 150 Behavior of Abdominal Cutaneous Reflexes in Acute Conditions within Abdomen and Pelvis. R. R. Smith, Grand Rapids, Mich.
- 151 *Eruptions Following Operation. F. B. McCarty, Chicago.
- 152 *Can Surgery Be Eliminated in Treatment of Fibroid Tumors of Uterus? J. A. McGlinn, Philadelphia.
- 153 Strangulated Epigastric Hernia. A. V. Moschcowitz, New York.
- 154 *Untoward Results of Pyelography. M. Krotoszyner, San Francisco.
- 155 *Treatment by Cautery of Gastric Ulcer. D. C. Balfour, Toronto.
- 156 *Autoplastic Bone Grafting. J. F. Oechsner, New Orleans.
- 157 *Concerning Renal Lesions After Pyelography. L. Buerger, New York.
- 158 *Immediate Bone Transplantation in Compound Comminuted Fracture of Tibia and Fibula. W. S. Barnes, Chicago.
- 159 Uses of an Arm-Board in Surgery. G. G. Turner, England.
- 160 *Treatment of Cranial Defects by Bone-Grafts. R. L. Rhodes, Roanoke, Va.
- 161 Pulmonary Abscess. A. H. Pirie, Montreal.

138. Internal Derangements of Knee.—Also published in the London *Lancet*, August 1 and abstracted in THE JOURNAL, August 29, p. 808.

142. Abstracted in THE JOURNAL, January 31, p. 405.

143. Postoperative Pleurisy with Empyema.—Burnham claims that pleural effusion is not of uncommon occurrence after operations, and may occur at any time, but is most often seen before or shortly after the subsidence of the postoperative temperature. It is most frequently seen after septic abdominal conditions, and is usually on the right side. A clear serous exudate in the right chest is not necessarily a serious complication, such cases usually going on to recovery. In so far as they refer to postoperative conditions, Burnham says, that Gee and Harder's statement that "pleural effusion following abdominal infection is more often purulent than serous" is not borne out by case records. There is a distinct clinical type of empyema which may complicate abdominal infections either before or after operations, and the case mortality of this type is high. The relationship which exists between perforated gastric ulcer, subphrenic abscess, and empyema is exceedingly close; and the occurrence of one of these conditions, without apparent cause, should lead to a suspicion of one or both of the others. A turbid or purulent effusion occurring in the right chest, following laparotomy, requires immediate drainage, and should lead at once to the exploration of the subphrenic space.

148. Abstracted in THE JOURNAL, June 27, p. 2047.

149. Abstracted in THE JOURNAL, June 20, p. 1988.

151. Eruptions Following Operation.—Eruptions following operation were found by McCarty to be of comparatively frequent occurrence, particularly after operations on parts abundantly supplied with sympathetic nerve fibers, as the pelvic organs, in which they occurred in $4\frac{1}{2}$ per cent. of a series of 1,000 cases. These eruptions occur after any of the

common anesthetics—ether, chloroform, or nitrous oxid. The condition is characterized by an interval between operation and onset of eruption, by lack of prodromata or of constitutional symptoms, by the presence of an erythematous or papular eruption with severe itching, and by the presence of an elevated temperature and moderate leukocytosis. The eruption often simulates scarlatina, measles, and the so-called drug exanthems. The exciting cause varies; drugs, enemata, anesthetics, and operative shock are included. The underlying cause is a vasomotor disturbance due probably to irritation of the sympathetic nervous system.

152. Fibroids of Uterus.—McGlinn says that surgery is the best treatment in fibroid tumors of the uterus and cannot be supplanted by any other known form of treatment, although roentgenotherapy has an important place in the treatment of these tumors. Surgeons and roentgenologists should not enter into competition with each other but should work hand in hand for the relief of womankind.

154. Untoward Results of Pyelography.—Krotoszyner would restrict pyelography to those comparatively rare cases in which the correct recognition of a renal lesion by a combination of all other exact methods of examination is impossible.

155. Treatment by Cautery of Gastric Ulcer.—The following technic described by Balfour has been employed in the cases thus far operated on in the Mayo clinic. The portion of the gastrohepatic omentum in the region of the ulcer is carefully dissected free from the lesser curvature. The ulcer is carefully palpated and with a Paquelin cautery maintained at a dull heat the point is slowly carried through the ulcer until an artificial perforation is produced. The moderate burning is continued until the actual area of the ulcer is entirely destroyed. Closure of the opening is then made by interrupted sutures of chromicized catgut reinforced by mattress sutures of silk. The reflected gastrohepatic omentum is then replaced over the site of the ulcer and fixed by superficial interrupted sutures of fine silk. In the application of this method the following facts are apparent: 1. The ulcer is destroyed and with it any early malignancy which may exist. 2. There is little sacrifice of sound gastric tissue, and secondary contraction is therefore minimized. 3. Hemorrhage, early or late, is with practical certainty prevented. 4. Its simplicity, speed of accomplishment and safety.

156. Abstracted in THE JOURNAL, May 30, p. 1748.

157. Renal Lesions after Pyelography.—In December, 1911, on examining a kidney removed two weeks after collargol pyelography, Buerger found distinct evidences of necrosis due to collargol in the renal parenchyma. Since then he used argyrol almost exclusively in this work, hoping that it might be less dangerous and less destructive of the renal tissue, even if it should penetrate into the renal parenchyma. A few months ago, a case was encountered in which extensive necrosis occurred in a hydronephrotic kidney after the injection of argyrol into its pelvis.

158. Comminuted Fracture, Fragments Used for Transplant.—Barnes cites a case, patient aged 59, of compound comminuted fracture of the left tibia and fibula about 2 inches above the ankle joint, with several spicula of bone protruding through the skin. The fibula was fractured about 2 inches above the tip of the malleolus. The upper fragment was overriding the lower fragment for a distance of about an inch. The tibia was comminuted about 2½ inches above its lower articular surface for a distance of about 5 inches. The bone was partially splintered, and the fragments were in malposition to the shaft of the bone as well as with each other. All the fragments were removed. One fragment, which measured 5½ inches in length and about the thickness of an ordinary sized man's little finger, was placed in sterile salt solution. It was sufficiently long to span the gap between the two tibia fragments. It was carefully trimmed so that all the ragged edges were smooth, and placed in the gap between the fragments, each end resting securely in the medullary canal of the fragment. Nothing was done with the fibula. The fragments were in good apposition.

Nine weeks after the operation the leg and foot were plumb, the fibular fragments had united firmly, the transplant was doing its work well and union had already taken

place between the ends of the transplant and the tibia. Eighteen weeks after the operation the union between the tibia and the transplant was firm and complete and was still progressing. Seven months after the operation regeneration of bone was still taking place. The transplant is disappearing by absorption and new bone is taking its place.

160. Treatment of Cranial Defects by Bone-Grafts.—Rhodes cites four cases in which a rectangular piece of bone large enough to cover the cranial defect was in each case taken from the flat surface of the tibia along with the periosteum covering and slightly larger than the graft and placed over the defect and anchored in position by sewing the periosteum of the graft to that of the skull with chromic catgut.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

October 3, 11, No. 2805, pp. 565-608

- 1 *Surgical Treatment of Nephroptosis by Occlusion of Perinephric Fascial Sac (Capsular Occlusion). C. B. Lockwood.
- 2 Use of an Aperient before Roentgenoscopy of Intestine in Chronic Constipation. R. Gompertz and M. Scott.
- 3 Insects and War: Fleas. A. E. Shipley.
- 4 Bacilli and Bullets. W. Osler.
- 5 Case of Ruptured Ectopic Gestation Complicated by Splenomedullary Leukemia. L. E. Sutcliffe.
- 6 Thymus Gland in Its Clinical Aspects. A. E. Garrod.
- 7 Technic of Thymectomy. Report of Eight Cases. A. MacLennan.
- 8 Appendicitis and Status Lymphaticus. D. P. D. Wilkie.
- 9 Association of Fulminant Pneumonia and Scrofula with Status Lymphaticus. C. McNeil.
- 10 *Headache, Its Causes and Treatment. H. Campbell.
- 11 *Acute Atrophy of Thyroid. F. C. Eve.
- 12 Case of Anemia with Enlargement of Spleen; Splenectomy; Cure. J. S. McKendrick.
- 13 Urinary Diastase Test in Case of Ruptured Duodenum. A. H. Lister.

1. Treatment of Nephroptosis by Capsular Occlusion.—The perinephric fascia not only restrains the movements of the kidneys during ordinary respiration but also during respiratory efforts and during joltings and shakings of the body. When the kidney becomes loose the perinephric fascia does not yield at its attachments. Its sac becomes too capacious, and then the kidney begins to have a wide range of movement within it. On this basis Lockwood treats loose kidneys by occluding the loose and too capacious perinephric sac or bag. An oblique incision is made about an inch below the twelfth rib, in the direction of the fibers of the external oblique, beginning behind at the outer border of the erector spinae, and extending forward for 4 or 5 inches. No nerves are divided, and the bleeding is trifling. The fascia transversalis having been opened, the finger is passed over the kidney to separate the perinephric fascia from the colon and peritoneum, and the perinephric fascia is taken between the finger and thumb at the lower end of the kidney, which is squeezed upward within the sac. When the kidney has gone up as high as is judged necessary, the perinephric fascia is clamped at its lower end with pressure forceps and ligatures of No. 2 and 3 twisted silk are passed round it with a curved needle. The ends of these ligatures are left long and used to fix the perinephric fascia to the abdominal wall. Before applying the pressure forceps the perinephric fascia is felt between the finger and thumb to make sure that the ureter is not being taken in. When the perinephric fascia has been ligatured the lower end of the kidney is at about the level of the twelfth rib and moving a little with respiration. Lockwood says that unless it is necessary to explore the kidney it is better not to open the sac of the perinephric fascia. The operation is completed by bringing the abdominal muscles together with chromic gut sutures, and suturing the skin with silkworm gut.

10. Headache, Its Causes and Treatment.—The following classification for headache proposed by Campbell though not conforming to the strict requirements of logic, will be found a convenient one for practical purposes: 1. Organic disease of the cephalic structures—for example, meningitis, "rheumatic" effusion into the scalp. 2. External irritation of the cephalic structures—for example, pediculi, traction on the

hair. 3. Irritation in areas other than the cephalic—for example, eye-strain. 4. Circulatory disturbances in the cephalic structures, and morbid states of the blood, causing functional headache. 5. Causes not included under the previous headings—for example, mental causes, physical exercise, atmospheric conditions.

Campbell also suggests that physicians will get far more help by studying man's diet from the point of view of evolution than from laboratory experiments—certainly as regards the main truths, useful as such experiments doubtless are. Primitive man consumed an abundance of animal food; his supply of sugar was limited to wild honey, his starchy food to what he could obtain from the uncultivated animal kingdom; and observe that before the discovery of cookery all this had to be masticated laboriously. Hence it was that primitive man consumed comparatively little starch and such as he did consume was so thoroughly masticated that it was to a large extent predigested in the mouth. In the case of neocivilized man, on the other hand, not only is sugar abundantly consumed, but the stomach (especially during the first years of life) is literally deluged with undigested starch. Such considerations surely suggest that, as regards the diet of our neocivilized patients, we have more to apprehend from an excess of starch and sugar than from an excess of animal food.

11. **Acute Atrophy of Thyroid.**—Eve cites a case of exophthalmic goiter which showed complete disappearance of a rather large goiter during the two days preceding death. That is to say, no trace of it could be detected by the eye or fingers. A post-mortem dissection was unfortunately out of the question.

Journal of Obstetrics and Gynecology of British Empire, London

August, XXVI, No. 2, pp. 75-132

- 14 *Subdivisions of Chronic Metritis. W. F. Shaw.
- 15 *Migratory Adenomyomata of Uterus. A. Leitch.
- 16 Case of Adenomyoma Uteri with Adenomyomata in Fallopian Tube and Sigmoid. W. Gough and C. E. Stewart.
- 17 Future of Roentgenology in Gynecologic Practice. C. Lockyer.
- 18 Accidental Hemorrhage with Free Blood in Abdominal Cavity. W. F. Shaw.
- 19 *An Unusual Complication of Fibroid Tumor in Pregnant Uterus. E. Reid.
- 20 Case of Superficial Atresia of Vulva in Patient Aged Twenty-Two. J. B. Hellier.
- 21 Case of Grape-Like Sarcoma of Cervix Uteri. J. B. Hellier.

14. **Subdivisions of Chronic Metritis.**—"Chronic metritis," Shaw states, is a clinical term which is used to designate uteri which are regularly enlarged, firm and cause hemorrhage, pain or leukorrhea. There are at least two classes of chronic metritis: (a) chronic subinvolution; (b) hypertrophy. These two classes can always be distinguished by the arrangement of the elastic tissue. Nulliparous and parous uteri can always be distinguished by the arrangement of the elastic tissue: (a) In a nulliparous uterus the elastic tissue is confined chiefly to the internal elastic lamina of blood-vessels with only thin fibrils in the media, adventitia, and between the muscle fasciculi of the mesometrium; (b) in a parous uterus some thick strands of elastic tissue can always be found surrounding some of the blood-vessels. In the hypertrophic form of chronic metritis the arrangement of the elastic tissue is the same as in a virgin uterus. In the subinvolved form of chronic metritis large deposits of elastic tissue are found in the walls and around the blood-vessels. The hypertrophic form is primarily due to a hypertrophy of the endometrium which stimulates uterine contraction, and in course of time produces a "work-hypertrophy." The chronic subinvolved form results after parturition when, from any cause, involution does not occur normally.

15. **Migratory Adenomyomata of Uterus.**—In a case cited by Leitch an adenomyoma having started from the endometrium migrated, or was extruded, through the wall posteriorly; owing to hemorrhage occurring during a menstrual period the serous surface was broken; the loaded and dependent sigmoid colon became adherent to this, the glandular constituents infiltrated the wall of the sigmoid; the adhesion became attenuated by movements of the intestine and at

operation the slender adhesion was broken; leaving a discoid portion in the uterus and an abraded area in the colon.

19. **Fibroid Tumor in Pregnant Uterus.**—When about two months pregnant Reid's patient while helping to put down a carpet felt a sudden pain to the right of the pelvis; it was not very severe, but she had to rest awhile. Next day she still had pains, but she was able to take an active part in a whist drive and dance. The following day the pains were worse, and she sent for her physician. The pains increased in severity in spite of rest and palliative treatment; vomiting and inability to sleep added to her distress and her condition was fast becoming somewhat alarming.

On opening the peritoneal cavity 4 to 5 ounces of dark venous blood gushed out, and there were extensive but recent adhesions of parietal peritoneum, omentum and small gut around the tumor. On separating these Reid found a soft fibroid tumor about the size of a fetal head at full term, partially extruded from the uterine wall to the right of the fundus. The rent in the uterus was fully 5 inches long, the edges of the tear were ragged, and there was slight venous bleeding. The fibroid had burst through its capsule, and at least half of it lay external to the uterine wall. The body of the uterus was enlarged and suggested a pregnancy of two or three months' duration. The tumor was easily shelled out, and the bleeding stopped by deep chromic gut sutures inserted to close the rent in the uterus. The abdomen was closed without drainage. On examination after removal the fibroid gave the appearance of being in an early stage of red degeneration. The pain entirely ceased after the operation, and the patient made an excellent and rapid recovery.

Lancet, London

October 8, II, No. 4753, pp. 835-882

- 22 *Application of Suturing to Vascular System. R. Warren.
- 23 *Value of Antistreptococcus Sera. J. W. McLeod.
- 24 Sclerocorneal Trephining. R. H. Elliot.
- 25 *Electrolytic Prevention of Lead Poisoning. K. Goadby.
- 26 *Electrolytic Treatment of Lead Poisoning. W. H. F. Oxley.
- 27 Improvisation of Apparatus in Treatment of Certain Fractures in Modern Warfare. (To be continued). J. H. Watson and T. Snowball.
- 28 Ambulance Work in France. J. Donelan.

22. **Application of Suturing to Vascular System.**—A case of stab wound of the right ventricle treated by suture is cited by Warren. A male, aged 48, fat and flabby in build, had been stabbed over the heart four hours previously. A small linear wound $\frac{3}{4}$ inch long (which did not appear to be deep) was found over the precordium, while external bleeding was minimal. The patient complained much of pain over the heart, was pale and anxious, with a small feeble pulse of 120; the area of cardiac dulness was perhaps slightly increased, and the heart sounds were feeble, but no adventitious sounds were heard. From the position of the wound and the amount of shock a diagnosis of hemopericardium was made. The pericardium was explored by turning up a flap of soft parts and removing the cartilages of the fourth and fifth left ribs with half the sternum opposite these. The intercostal and internal mammary vessels were tied and the triangularis sterni displaced. The pericardium was tense, dark in color, and the cardiac impulse obscured. The pericardium was freely opened, much blood escaping, and a wound $1\frac{1}{4}$ inches long in the anterior surface of the right ventricle was secured with catch forceps and sutured with five stitches of silk. The wound healed by first intention, and with the exception of slight left pneumothorax (due to tearing the pleura at the exploration) and a little femoral thrombosis, uneventfully. The patient was alive and active three years later.

23. **Value of Antistreptococcus Sera.**—McLeod studied this question experimentally and by reviewing the literature as a result he believes that a certain type of streptococcus exists, which is virulent for rabbits and capable, to a peculiar degree, of producing toxin in the body of an infected animal, against which rabbits cannot be readily immunized, and that the serum of a horse treated with injections of these streptococci is not capable even in large doses of conferring passive immunity on the rabbit. None of the serums available is likely to afford a supply of immune opsonin at once adequate in amount and sufficiently adapted to the strain

of streptococcus involved markedly to alter the course of streptococcal infection in man.

In the treatment of severe streptococcal infections normal heated horse-serum, which has been proved slightly superior in the experiments recorded by McLeod, and which would in any case be cheaper and more easily preserved, might if administered in large doses, be substituted with advantage for commercial antistreptococcal serum. McLeod believes that experimental work on the therapy of streptococcal infections which aims at finding some artificial antibody to streptococcal toxin is much more likely to be fruitful than any further efforts to amend and improve the methods of immunizing horses to this type of bacteria.

25. Electrolytic Prevention of Lead Poisoning.—Goadhy's experiments in vivo and in vitro give no support to the contention that lead is eliminated from the animal body by the electrolytic methods tested; neither do they suggest any grounds for the adoption of electrolytic baths for the prevention or treatment of lead absorption or lead poisoning.

26. Electrolytic Treatment of Lead Poisoning.—Oxley claims that no practical good would result from the regular treatment of lead workers by electric baths as described by Sir Thomas Oliver. His experiments show a consistently negative result even under more favorable conditions for lead extraction than can be obtained in the human subject.

Berliner klinische Wochenschrift

September 21, LI, No. 38, pp. 1637-1656

29 *Arteriomesenteric Occlusion of the Duodenum. E. Melchior. Concluded in No. 39.

30 *Supernumerary Kidneys. (Ueber Beinieren.) K. Neckarsulmer.

31 *Silver Nitrate Therapeutically Superior to All Other Silver Salts. (Silberniträt oder Silbereiweiss.) W. Lublinski.

29. Arteriomesenteric Occlusion.—Melchior does not agree with Codman and others who think that the viscera are suspended by their ligaments or mesentery. The very structure of the suspending ligaments or mesentery speaks against this, as any substance intended to stand direct traction always contains strands of tendon fibers, while there is nothing of the kind in the mesentery, and it is absurd to suppose that the hepatogastric ligament, for example, is capable of sustaining the weight of the heavy, filled stomach. The organs in the abdominal cavity either float or rest on the organs below, and these on the floor of the pelvis and the abdominal wall. Attempts to correct the sagging of the viscera by strengthening their alleged supports are illogical and futile. He presents a number of arguments to sustain these views as bearing on the mechanism of the development of acute duodenal ileus or arteriomesenteric occlusion, as it is more generally called.

30. Supernumerary Kidneys.—Five cases of a well-formed extra kidney have been published, but without microscopic examination as to whether the supernumerary kidney was an actually functioning organ. Macroscopically they seemed to be such, and their independent location nearer the pelvis seemed to confirm that they were more or less perfect extra kidneys. Cases of a supernumerary rudimentary kidney are comparatively common, and Neckarsulmer reports one he recently encountered in the cadaver of a 9-months-girl baby. This third kidney was adherent to the left kidney but it had its own ureter. Its development had evidently been arrested in an embryonal stage. As its ureter was impermeable, it could never have secreted normally, but there were signs that its tissues had reacted to the measles and pneumonia toxins in the same way as the normal kidneys. These rudimentary organs have always been found clinging to the normal kidney.

31. Silver Preparations.—Lublinski admits the unpleasant taste and pain of application when silver nitrate is used on the mucosa of the upper air passages, but declares that all his attempts to find an effectual substitute for it have been fruitless. No other preparation of silver approaches it in therapeutic action, he says. The silver content does not seem to be the effectual factor. It is like salvarsan; the arsenic in salvarsan is not responsible for its efficacy—it is the special combination. Even the smallest dose is more

effectual than large amounts of arsenic, and there seems to be something of the same special therapeutic efficacy in silver nitrate. It is true that silver nitrate coagulates the albumin and this has been assumed of late to be a barrier to its penetration into the depths. This has been the stock argument on which manufacturing chemists have based their claims for the superiority of their preparations. Lublinski's research has confirmed that under the action of silver nitrate on the mucosa the albuminate is precipitated. But it must not be forgotten that this precipitate, formed by the albumin under the influence of the silver nitrate, rapidly dissolves again in salt solution, which fact we utilize by gargling with salt solution after cauterization with the silver nitrate. The precipitate deposited then is of a different color, tending to violet, as it consists of silver chlorid. This is not soluble but it is possible that the drawing out of the chlorids from the tissues to make it may have some therapeutic action on the diseased tissues. There is no evidence to show that this silver chlorid precipitate opposes any barrier to penetration into the depths, and, on the other hand, there are many things that testify to penetration and decided action of the silver in the deeper tissues. For example, how otherwise can we explain the after-pain, the pain that is experienced ten or twenty minutes later than the pain of the primary superficial application. He thinks it must be due to the action of the caustic on the deeper tissues. Of course he does not refer to actual cauterization with painful destruction of tissue; this abuse of therapeutics he denounces, saying that it is not in this excessive use of silver nitrate that its therapeutic efficiency is displayed.

Deutsche medizinische Wochenschrift, Berlin

September 17, XL, No. 38, pp. 1753-1768

32 *Cancer Problems. (Krebsprobleme.) D. v. Hansemann.

33 *Diagnosis of Small-Pox. (Blattern.) Risel.

34 *Salvarsan in Scarlet Fever. (Salvarsaninfusionen bei Scharlach.) F. Glaser.

35 *Deep Injections in Treatment of Sciatica. (Injektionsbehandlung der Ischias.) Lethaus.

32. Cancer Problems.—Hansemann's article was summarized in the Berlin Letter in THE JOURNAL, Sept. 5, 1914, p. 879.

33. Diagnosis of Small-Pox.—Risel states that his article is based almost entirely on Ricketts' work on this subject, published in 1908, and Wanklyn's in 1913. Ricketts had charge of the isolation hospitals in England, in which were treated 7,842 cases of small-pox in 1912, while there has been no opportunity to study small-pox in Germany of late years, as the strict enforcement of the vaccination law of April 8, 1874, stamped out the disease in Germany. He says that the distribution of the eruption seems to be the most important differential feature as it affects the regions exposed to weather and friction from clothes, the soles of the feet, etc., while the eruption in varicella seeks out the most sheltered regions.

34. Salvarsan in Scarlet Fever.—Glaser has used salvarsan in forty-two cases of scarlet fever in children and adults, and says that it often had a favorable influence on the fever and delirium and the throat symptoms rapidly subsided under it in many instances. But the toxic symptoms did not seem to be affected by the drug and complications were not warded off. In about half the cases the dose, calculated at 0.01 gm. per kilogram of weight, was followed by a chill, vomiting and diarrhea.

35. Blocking the Nerve in Treatment of Sciatica.—Lethaus does not venture to use alcohol to block the sciatic nerve as this is fraught with such danger for a nerve with both motor and sensory fibers. He injects 100 c.c. of a 1 per thousand solution of a mild anesthetic at the point where the sciatic nerve emerges from the great sciatic foramen, between the trochanter and the tuberosity of the ischium. The injection is made into the nerve itself when possible, but often it is merely a perineural injection. It is repeated after an interval of eight days; sometimes three or four injections are necessary to realize a complete cure. No untoward by-effects were observed in any instance in his experience. When repeated injections do not accomplish the purpose, he tries epidural injections, and has sometimes had good results.

For this he injects 10 or 20 c.c. of salt solution into the epidural sac through the sacral hiatus, the patient in the knee-elbow position. Sometimes three or four injections had to be made to cure the sciatica completely. In some cases both these measures failed, and recurrence was sometimes observed. This is not to be wondered at, he says, as persons subject to sciatica are usually those with a predisposition to nerve and joint derangement.

He emphasizes that in treatment of sciatica far too often the real cause is overlooked. This may be flat-foot, varices, tarsalgia, tumor in the pelvis, inflammation in the hip-joint, displacement of or inflammation in the internal genitals, obstinate constipation, disease of the lumbar vertebrae or sacrum, or disease of the spinal cord or its roots or meninges—any of these may simulate sciatica. He warns further that no attempt should be made to block the nerve when the sciatica is the result of some general disease, such as malaria, influenza, nephritis, diabetes, arteriosclerosis, or lead or alcohol poisoning, also the pains liable to occur in the hysteric and neurasthenic which masquerade as sciatica but are really of central origin. Oppenheim's "psychalgias" are likewise not suitable subjects for nerve blocking. But when the above can be excluded, Lethaus advocates prompt resort to injection treatment in chronic sciatica rebellious to other measures. He does not wait longer than from four to six weeks, during which time bed rest, sweat baths, packs of the limb affected, diathermia and the usual antineuralgic and antirheumatic measures are systematically applied.

Medizinische Klinik, Berlin

September 13, X, No. 37, pp. 1461-1480

36 *Acute Overexertion of the Heart in the Field. (Die akute Ueberanstrengung des Herzens im Felde.) K. Brandenburg.

37 *Roentgen-Ray Work in the Field. (Feldröntgenwesen.) H. Strauss.

38 *By-Effects of Drugs. (Nebenwirkungen der Arzneien.) Grumme.

39 Ureter as Content of Hernial Sac. (Ureter als Bruchinhalt.) Pflücker.

September 20, No. 38, pp. 1481-1502

40 *The Diseases that Must Be Reckoned with During War. W. His. Commenced in No. 37.

41 The Surgeon on the Battle Field. A. Köhler. Concluded in No. 39.

42 Care of the Wounded in the Home Zone. (Kriegschirurgie im Heimatlazarett.) E. Heymann. Concluded in No. 39.

43 Hydrotherapy and Mechano-therapy for Wounded and Sick Soldiers. A. Laqueur.

44 Saline Infusion and Proctoclysis. (Die Infusion von physiologischer Kochsalzlösung.) O. Nordmann.

36. **Acute Overexertion of the Heart in the Field.**—Brandenburg comments on the reserve capacity and reserve muscular contractile force of the sound heart which enable it to stand sudden extreme strain without appreciable permanent injury, but the physical, psychic and nervous stress in war may strain the heart beyond its endurance. Extreme muscular exertion has been known to strain even a sound heart beyond its power to endure, as in the Marathon runner and in racehorses. In the collapse on the march known as heat-stroke, the overstrain of the heart is probably a factor superposed on the excitement and exhaustion from inadequate sleep and food. Treatment must include complete physical and mental repose; the patient must be put to bed, his clothes removed, with cold applications to the heart and venous cation if there is venous congestion. The acute dyspnea and collapse require stimulants, brandy or coffee, hot baths and mustard pastes applied to chest and back of neck. An intravenous injection of some preparation of digitalis is often marvelous in its effects; it can be followed by subcutaneous injection of some digitalis preparation plus epinephrin. Even if the patient rapidly recuperates, complete rest should be enforced as long as possible. Signs of dilatation and a persistently rapid pulse call for extreme caution and avoidance of all physical exertion. The prognosis depends mainly on whether the heart was previously sound or not. Syphilis may have impaired the arteries of the left heart, or alcohol or immoderate eating. Men used to carrying heavy weights or other hard manual labor, and drinking much fluid, especially beer, are particularly liable to break down first on the march.

37. **Roentgen Work in the Field.**—Strauss says that to date Roentgen apparatus have been utilized in eight cam-

paigns in the field. The Italians applied them first in their campaign in Abyssinia in 1896, and in the Spanish-American War seventeen sets of Roentgen apparatus were at the disposal of the force. But the ever growing disinclination to operate at the front has shown that Roentgen examination is useful only to disclose conditions in an infected wound or in a wound in the skull—both of these can be done only in the base hospitals or home zone, as rest is necessary after trephining, etc. The German army, he relates, is provided with Roentgen apparatus and camera, dynamo and benzine motor, all mounted in a wagon which four horses can draw over any kind of a road. No attempt was made to use an autotruck for the purpose as snow and bad roads might put it out of commission. Two roentgenologists and a man to run the motor accompany each apparatus.

38. **By-Effects of Drugs.**—Grumme defines the nature of idiosyncrasy, etc., in regard to drugs, recapitulating his views in the statement that the obligatory by-effects of drugs are characteristic for each. They develop gradually and are always alike when sufficient of the drug has been taken to induce the by-effects, and the by-effects can be arrested by suspending the drug. The idiosyncrasy, on the other hand, is a facultative by-effect; it usually comes on rapidly and suddenly, and its course is not under our control by suspending the drug. Iodism, bromism and mercurialism are obligatory by-effects.

40. **Diseases that Must Be Reckoned with During the War.**—"War and Pestilence"—these have always been coupled in popular parlance. His remarks, and with the present war, whose duration and extent no one can foresee, the pestilences of olden days may very soon loom up as a threatening reality. The troops at the front are set back centuries of hygienic training. Hundreds of thousands are crowded together in small spaces without provisions for water, cleanliness or sewerage, and exposed to the vicissitudes of weather. Civilization has given us knowledge of the causes and weapons with which to fight disease and the community has done this for us, but now the individual must take the weapons in his own unskilled hands and wield them himself. By comparison with statistics from recent campaigns, we can expect, he continues, that every second man in the army will be in the hospital sooner or later for a longer or shorter stay. Most of them will require treatment merely for sore feet or digestive disturbance. A somewhat more important rôle will be played by polyarthritis, pneumonia, bronchitis, etc., from getting chilled and overexerted. But the kind and extent of epidemic diseases will determine the fighting capacity of the troops in the long run. All depends on detection and isolation of the first cases, and he reviews each of the chief epidemic diseases in turn, portraying the clinical picture of the incipient stages, and outlining treatment. He pays tribute to the work of the profession in sanitizing the Panama Canal Zone. The medical forces there were able to precede and prepare the isthmus for the workmen, but an active army cannot wait for this. In Russia, typhoid, typhus, small-pox and dysentery occur in about the same figures year after year, but cholera seemed to die out in 1913. About 145 cases have been reported already this year and 49 cases of bubonic plague. In India plague keeps up indefinitely, averaging 1,500 cases a week. The danger therefore is from the east. He says of typhoid that the contrast between the severe physical depression and the absence of any pathologic findings in any organs is the most characteristic warning signal; even the spleen does not become enlarged until the end of the first week. Herpes is of rare occurrence. Paratyphoid is seldom transmitted by contact; the incubation period is only from three to six days, and herpes is more common. As differentiation from typhoid is so difficult it is better to isolate as if for typhoid. Manchurian typhus begins suddenly; the spleen is enlarged the first day. The temperature runs up to 104 and keeps there for nine to fourteen days.

Münchener medizinische Wochenschrift, Berlin

September 15, LXI, No. 37, pp. 1929-1960

45 *Action of Ferments Revealed in Histologic Sections. (Nachweis der Wirkung spezifischer Abwehrfermente im histologischen Schnitt.) H. Rollett.

- 46 Peptolytic Ferments in the Urine. II. W. Sagel.
47 *Luetin in Diagnosis of Syphilis. (Diagnostische Versuche mit Luetin-Noguchi.) M. Clausz.
48 *Prophylaxis of Diphtheria. K. Kassowitz.
49 Inflatable Bulb for Occlusion of Lower Esophagus when there is Danger of Aspiration of Vomit. (Eine Kardialabschlusssonde.) A. T. Jurasz.
50 Progress in Diagnosis and Treatment of Surgical Tuberculosis. F. König. Commenced in No. 36.
51 The First Wounded Received at Munich. (Die ersten Kriegsverletzungen.) A. Krecke.
52 Arrow-Like Missile Plung from Airship. (Kriegschirurgische Erfahrungen über Pfeile als Wurfgeschosse.) J. Volkmann.
53 Surgical Impressions from the II Balkan Campaign. R. Klapp. Concluded in No. 38.
54 Intravenous Antitoxin Treatment of Traumatic Tetanus. (Wundstarrkrampf.) L. Kirchmayr.
September 22, No. 38, pp. 1961-1992
55 *Fever from Retention of Infected Masses. (Resorptionsfieber oder Retentionsfieber.) A. Hamm.
56 *Origin of Edema with Nephritis. E. Magnus-Alsleben.
57 Colorimetric Determination of Albumin. (Die kolorimetrische Eiweisbestimmung als exakte analytische Methode und ihre Verwendung für Autenrieths Kolorimeter.) M. Claudius.
58 *Sand Test for Bile Pigment and Hemoglobin in the Urine. (Einfache Probe zum Nachweis von Gallenfarbstoff und Hämoglobin im Harn.) H. Lipp.
59 Paratyphoid Simulating Typhoid; Two Cases. W. Glaser.
60 Vaccine Diagnosis and Therapy of Gonorrhea. (Wert intravenöser Arthigoninjektionen bei gonorrhöischen Prozessen.) A. Arnold and H. Holzel. (Kollargol und Arthigon bei gonorrhöischen Komplikationen.) Renisch.
61 Date and Place of Birth, Instead of Names, to Preserve Secrecy in Notification of Venereal Disease. (Die Anzeigepflicht bei venerischen Krankheiten ist leicht durchführbar.) L. Merk.
62 Treatment of Typhoid. (Unterleibstypus.) E. Romberg.
63 Differentiation of Dysentery. (Differentialdiagnose der Ruhr gegenüber anderen ähnlichen Darmkrankheiten.) A. Schmidt.
64 *Treatment of Prolapse of the Intestines in the Field. (Darmprolaps im Felde.) F. Riedinger.
65 Circular to be Distributed before Naval Battle. (Sanitätsmerkblatt für das Verhalten im Seegefecht.) M. zur Verth.
66 Ordinary Boiled Water Can Be Used for Saline for Intravenous Infusion in Emergencies. (Kochsalzlosungen.) F. Hercher.
67 Food of Civilian Population during the War. (Die Ernährung der deutschen Zivilbevölkerung im Krieg.) Hecht and Others.

45. Microscopic Determination of Protective Ferments.—Rollett left the specimen of serum from a pregnant woman in contact with scraps of placenta tissue for sixteen or twenty-four hours, with a control experiment with normal serum. The scraps of placenta were then embedded, sections made and stained. Under the microscope the sections from the pregnant serum then showed marked differences in the aspect of the specific placenta tissue. The test was positive only when the placenta scraps had not been subjected to pressure or the action of chemicals before the serum was poured over them. Similar tests with cancer serum have proved disappointing to date.

47. Luetin in Diagnosis of Syphilis.—Clausz applied luetin in 71 cases of syphilis; 10 suspects and 30 of non-syphilitic affections, comparing the findings with the Wassermann reaction. They show that a positive response is decisive; the luetin findings were sometimes positive when the Wassermann failed to elicit a response with known syphilis. The luetin reaction in the torpid cases may be two weeks in developing.

48. Prophylaxis of Diphtheria in an Institution.—Kassowitz has bacteriologic examination made of every person who has been in contact in any way with a case of diphtheria, and repeats it at the end of a week at latest. The persons giving positive findings are at once sent away and the institution is closed until thorough disinfection has been done. The bacilli carriers are given a test intracutaneous injection of toxin and those responding with a positive reaction are treated with antitoxin. All are kept under ambulatory observation, with repeated bacteriologic-serologic control. For local treatment he has found rinsing with 0.5 per cent. solution of hydrogen dioxide the most effectual measure. By these means he stamped out an epidemic in a kindergarten after there had been five cases and eight bacilli carriers were discovered among the fifty-two children. None of the bacilli carriers developed the disease under this treatment.

55. Retention Fever.—Hamm insists that the fever which results from retention of infected masses in the organism and

which ceases when these masses are cleared out is the only type of "retention fever" which modern science should recognize; the old terms for it, "absorption fever," "putrid intoxication," "sapremia," "saprophytemia," "toxinemia," etc., should be discarded. The term "retention fever" includes all these various conceptions and points the way at once to effectual treatment. Infection and intoxication from bacterial products are always associated; he even goes so far as to assert that from the clinical point of view we may safely assume that there is no infection without intoxication and also no intoxication without infection.

56. Factors of Edema with Nephritis.—Alsleben was impressed by the fact that a patient with acute nephritis retained nearly all of a liter of tea while 800 c.c. of saline injected intravenously was nearly all voided in the urine. In another case there was a slight tendency to diffuse edema with contracted kidney. The patient then developed conjunctivitis and while it lasted there was extreme and extensive edema although the eye affection was very mild. As the latter subsided, the edema returned to its old, mild form. In some cases of scarlet-fever nephritis, likewise, water taken by the mouth was retained while fluid injected intravenously was promptly eliminated by the kidneys. These and analogous experiences related confirm, he says, the assumption that partial functions of the kidneys can be disturbed while others are unimpaired, and also that retention in nephritis must depend to a certain extent on factors outside of the kidneys. Inability to eliminate water by the kidneys does not entail dropsy but merely intravascular retention of the water, hydremia. Edema may also occur with intact kidneys.

58. Sand Test for Bile Pigments and Hemoglobin in the Urine.—Lipp spreads on a plate a layer of white sand, about 3 cm. thick. On this he pours some of the urine to be examined. If the urine contains pigments, a spot is left on the white sand which is brown with hemoglobin and with a greenish tinge in case of bile pigment. He has found this simple test extremely reliable.

64. Management of Eversionation in the Field.—Riedinger has been experimenting with rabbits to learn how best to protect prolapsed intestines before the laparotomy is possible. The best results were obtained with liquid petrolatum poured over the exposed bowels; glycerin and vaselin also proved effectual in warding off peritonitis in some of the rabbits.

Zentralblatt für Chirurgie, Leipsic.

September 19, XLI, No. 38, pp. 1489-1512

- 68 *Surgery of the Cavity of the Greater Omentum. (Zur Chirurgie des grossen Netzbeutels.) G. Ziembicki.

68. Surgery of the Cavity of the Omentum.—Ziembicki reviews various pathologic conditions in the bursa omentalis which may require operative measures, such as hernia through the foramen of Winslow (twenty cases were on record in 1906); abscess in the liver perforating into the bursa omentalis; accumulation of lymph or of blood from hemorrhagic pancreatitis or rupture of splenic artery; involvement of the region in necrosis of the pancreas; and pseudocysts and invasion by cysts starting in the pancreas. Lymph is liable to accumulate in the bursa omentalis after contusions or other trauma, and it can be safely evacuated. The cavity of the omentum may be entirely filled with the effusion. Elter and Auvray each operated in a case of this kind and found no signs of connection with the pancreas. Still another pathologic condition possible is hernia of the gall-bladder into the cavity of the omentum. Ziembicki operated in a case of this kind, supposing that the tumor felt in the bursa omentalis was a cyst, probably originating in the pancreas. Puncture however brought bile, and the tumor proved to be the much enlarged gall-bladder which had slipped through the foramen of Winslow or some abnormal opening into the cavity of the omentum. The patient was a man of 42 who had complained for five years of pain in the stomach region gradually becoming unbearable during the last year. After draining the dislocated gall-bladder the fistula soon healed and the man has been entirely well since. In conclusion Ziembicki describes what he thinks

is the eighth case on record of a tumor developing primarily in the bursa omentalis. All were cancers, and they were distinguished by their very slow growth and absence of metastasis. His patient was a man of 32 who had had symptoms for four years, ascribed at first to a tumor in the liver.

Zentralblatt für Gynäkologie, Leipsic

September 19, XXXVIII, No. 38, pp. 1249-1264

69 *Scopolamin. J. Fonyo.

69. **Scopolamin in Anesthesia.**—Fonyo thinks that he is justified in drawing the conclusion from his experiences with scopolamin in 154 cases that the scopolamin-morphin technic is not dangerous for vigorous and well-nourished patients. But when a not very strong patient has been purged for an operation and is not allowed or does not wish to eat and is not allowed to drink for fear of bringing on vomiting, the organism feels the effect of the drugs much more intensely. Disturbances are peculiarly liable if there is already some derangement in the respiratory apparatus, as morphin seems to act particularly on the respiration center. One of his patients with cancer of the rectum has been given regularly three times a day for weeks a subcutaneous injection of 0.0006 gm. scopolamin and 0.02 gm. morphin without any disturbance; she is able to eat and is well nourished. An older, demented woman suffering from hunger and thirst, was given a single dose like the above, fractioned, and fell into a deep sleep, and died with signs of paralysis of the respiration in forty-eight hours.

He relates the details further of two fatalities following operative delivery at term with contracted pelvis or extra-uterine pregnancy. Cesarean section was done in one case and pubiotomy in the other. Both succumbed to paralysis of the respiration one hour after the operation which had been done under chloroform preceded by 0.0012 gm. scopolamin and 0.03 gm. morphin. He thinks that the loss of blood and the lack of food as the patients were being prepared for the serious operations were responsible for the unusual toxic virulence of the drugs. He remarks that the mishaps from scopolamin are more numerous since pantopon has been substituted by some for the adjuvant morphin. Voit and others have calculated that during inanition the skin loses up to 97 per cent. of its fat, the liver 70 per cent. and the muscles 64 per cent., but the lipid content of the brain increases. Consequently the brain is larger in proportion than when the organism is well nourished, and this gives greater play to the toxic action of the drugs.

Gazzetta degli Ospedali e delle Cliniche, Milan

September 17, XXXV, No. 109, pp. 1169-1184

70 *Progressive Pernicious Anemia. (La malattia del Biermer.) E. Cavaglieri.

September 20, No. 110, pp. 1185-1200

71 True Pellagra in Southwestern Russia. G. Tizzoni.

September 24, No. 111, pp. 1201-1216

72 Occlusion from Adherent Mesocolon after Retrocolic Gastro-Enterostomy. G. Baroni.

70. **Biermer's Pernicious Anemia.**—Cavaglieri emphasizes the differences between the morbid entity described by Biermer and progressive pernicious anemia from other causes, and with a relatively different course. The true Biermer anemia develops insidiously, without known cause, but besides the destruction of the blood, pathologic conditions are found in the stomach and intestines, and various other organs show degeneration when the disease has run its inexorably fatal course. It is more common in the middle aged and he has found it more frequent in women. Its comparative rarity in Italy may be due, he remarks, to failure to differentiate it. In a case reported in detail in a woman of 35, extreme weakness and intestinal disturbances were the first symptoms. The intense pallor was in marked contrast to the well-nourished aspect. Bacteriologic examination was negative and no benefit was obtained from a tentative course of quinin. Death occurred in astyole the eighth month after the first signs of trouble. Treatment can be only symptomatic in such cases; remissions sometimes occur spontaneously but he is convinced that the few cases

reported as recoveries were probably not true Addison-Biermer pernicious anemia; this is inevitably fatal, generally in from ten to fifteen months.

Brazil Medico, Rio de Janeiro

September 1, XXVIII, No. 33, pp. 317-324

73 Lactose Plus Sodium Citrate in Infant Feeding. (Tratamento da dyspepsia infantil pelo leite adocicado.) A. A. S. Morcira.

74 The History of Parasitology in Brazil. A. C. de Sant Anna. Concluded.

September 8, No. 34, pp. 325-332

75 Strongylidae in Brazil. (Tricoststrongylideós brasileiros. III.) L. Travassos.

Russky Vrach, St. Petersburg

XIII, No. 18, pp. 633-668

76 *Management of Delivery with Contracted Pelvis. V. V. Stroganoff.

77 Morphology of Lymphosarcomas. N. V. Petroff.

78 *The Washing of Blood Outside the Body and the Vital Stability of Red Blood-Cells. V. A. Iurevich and W. R. Rosenberg.

79 *Plague among Camels in the Epidemic of Astrakhan Plague. N. N. Klodnitzky.

80 Technic for Examining the Isolated Kidney. M. I. Gramenitzky.

81 *Etiology and Treatment of Dysentery. G. I. Kopitko and V. E. Nagorskaia. Commenced in No. 15.

82 *Saline Infusion. M. V. Sokolova.

83 *Coccobacillus Exanthematicus*. N. A. Sokalsky.

No. 19, pp. 669-704

84 *Determination of the Viscosity of the Blood. V. S. Sadikoff and A. A. Lozinsky.

85 *The "Uremic Constant" in Nephritis. I. B. Studzinsky.

86 *Cutaneous Tuberculids in Young Children. S. Ostrovsky.

87 *Cholesterol Esters in the Urine in Connection with Deposits of Anisotropic Fat in the Organs. A. V. Lavrinovich.

88 *Hexamethylenamin in Acute Disease of the Lungs. P. I. Mikhailoff.

76. **Management of Contracted Pelvis.**—Stroganoff recommends cesarean section in an absolutely contracted pelvis (true conjugate 6.5 or 5.5 cm), even when the fetus is dead. With a conjugate of 6.5 to 7 cm. he advises either cesarean section, or craniotomy, according as the fetus is alive or dead and the mother is willing to undergo a serious operation. When the true conjugate is 7 or 8 cm., forceps or cesarean section or craniotomy are justified, and, in multiparas, also the history and course of the previous deliveries should be taken into consideration. The same course should be pursued when the true conjugate is 8 cm. or more, though in such cases he advises to wait for natural delivery. Besides the diameter of the conjugate, other circumstances are of importance, the size and shape of the child's head, the size of the pelvis, its ability to stretch, the mother's health, etc. As these factors cannot be as accurately determined as the conjugate diameters, these are still to be considered of paramount importance as the guide to management of labor with contracted pelvis.

78. **Blood Washed and Returned to the Body.**—Iurevich and Rosenberg experimented on rabbits and demonstrated that the blood can be removed from the body, thoroughly washed out and reintroduced into the animal's system without causing any appreciable morbid symptoms. The blood was taken from the carotid artery, drawn into test-tubes containing a 1.5 per cent. solution of sodium citrate to prevent coagulation, and up to one-half of the total amount of the animal's blood was thus withdrawn. It was then centrifuged for about ten minutes; the plasma was removed and replaced with normal salt solution, and the blood was again centrifuged, repeating these procedures three times if necessary. Then the thoroughly centrifuged and washed blood was warmed (to 38 or 40 C.) and injected back into the rabbits, through a vein in the ear. In some they immediately replaced the amount of the withdrawn blood by a corresponding amount of normal salt solution. They found that only a small proportion of the red blood-cells became destroyed, the majority remaining intact, even when the blood was kept outside the body for two or three hours. Thus the stability of the red blood-cells is very great, and in cases of toxemia, when the blood is saturated with toxic substances, blood-letting followed by reintroduction into the vascular system of the blood that had been removed and washed ought to be of great clinical value. Experiments along these lines are now being conducted.

79. **Plague among Camels and Its Etiologic Importance in the Epidemic in Astrakhan.**—Klodnitzky reports numerous facts showing that camels are not immune against plague, but are the chief cause of epidemics of this disease in some parts of southeastern Russia, among the Kirghiz tribes. The camel's meat is used as food by these people, especially when the animal gets sick, and it is thus a frequent cause of epidemics. The skins of camels are used for different purposes; this is another source of the plague. The disease in 1911 and 1913 occurred mostly in the form of winter pulmonic plague, which may be explained by the fact that the camels are butchered early in the winter in great numbers. The marmots (*Mus scitillus*) could not be held responsible for the infection as he says they burrow underground to stay by the end of July, and the epidemic in 1913 began in October and ended in December. There were 400 cases of the pneumonic form.

81. **Etiology and Treatment of Dysentery.**—Amoebic dysentery does not occur in Russia except imported cases from tropical countries or in persons infected at home by the imported cases. Emetin proved wonderfully effectual in the cases of amoebic dysentery reported here. The other form in which dysentery occurs in Russia is due to the Shiga-Kruse bacillus. The best treatment for this, according to Kopitko, seems to be ipecac in powder form (1 or 0.5 gm. once or twice a day), or Dover's powder (0.3 gm. three times a day) or a combination of ten drops of simple tincture of opium with five drops tincture of ipecac, three times a day.

82. **Saline Infusion.**—Sokolova has had extensive clinical experience with intravenous and subcutaneous injections of normal salt solution in various suppurative diseases, especially those of the peritoneum. Five or six liters of normal salt solution were often injected during the first twenty-four hours after the operation and then smaller amounts for seven or more days. The pulse remains full for a long time, diuresis was increased, and the urine was of low specific gravity, but the wounds were pale, showing poor granulations. At the end of the first week after the operation edema would develop in the feet, hands, skin of the trunk and sometimes of the face. Necropsy would show flabby tissue, especially of the heart, and eventually degeneration of the kidneys. These changes might be ascribed to the infusion or to the original suppurative disease.

To clear up this question Sokolova instituted experiments on normally fed and starving dogs, as patients with purulent peritonitis are in a condition of practical starvation. She made 200 injections intravenously or hypodermically, in amounts totaling one-thirteenth to one-sixth of the body weight. Dogs were kept ten days without food or drink and then the experiment was begun. Four dogs were not starved; these served as controls. It was found that in the starving dogs part of the injected fluid was retained, as the amount of voided urine was smaller than that of the fluid introduced, and edema developed unless the animals succumbed during the first three or four days; the amount of nitrogen excreted was smaller than in non-starving dogs. In the non-starving animals edema never developed, not even after profuse infusions. The edema does not depend so much on loss of nitrogen or phosphorus as on the incomplete elimination of the fluid from the body. The kidneys suffer more than any other organ (static hyperemia). Starving animals succumbed to the saline infusions quicker than the control animals. The practical conclusion is that large amounts of fluid may prove directly injurious for an exhausted body.

84. **Influence of Water, Saline, Etc., on the Viscosity of the Blood.**—Sadikoff and Lozinsky studied the changes in the viscosity of the blood in man, rabbits, sheep, guinea-pigs, cats and pigeons under the influence of water, salt solution, etc. Rabbit blood diluted with normal salt solution does not show any changes in the viscosity but when diluted with ten parts plain water the viscosity increases. In pigeon blood the plasma also shows increased viscosity when diluted with an equal volume of water. The same occurs in man; solutions of human blood with ten parts water, ammonia or normal salt solution give an increased blood viscosity, but saturated ammonia solution increases viscosity less than

plain water. The plasma also shows increased viscosity with an isotonic normal salt solution. Hence normal salt solution is by no means an indifferent medium for the red blood-cells, because it increases the viscosity of the blood and causes swelling of the red blood-corpuscles even in weak solutions. Therefore, red blood-cells washed with large quantities of normal salt solution—such as are used for hemolysis experiments—are not normal cells, but artificial products. As the plasma and serum also show viscosity changes, it follows that the albuminoid substances in the plasma must undergo ultramicroscopic changes at least, which changes probably play a part in the phenomena of immunization.

85. **Ambard's "Uremic Constant" in Kidney Disease.**—This mathematical formula for estimating the functional capacity of the kidneys was described in *THE JOURNAL*, March 7, 1914, p. 813. Studzinsky cautions that the index may vary on account of different factors, such as infectious disease, liver disease, presence in the urine of albumin or sugar. In these conditions the uremic constant is abnormally low, while on the other hand salt-poor food and acute febrile diseases, edema and oliguria increase the index figure. For these and other reasons Studzinsky thinks that the formula is of little clinical value in a large proportion of cases.

86. **Cutaneous Manifestations of Tuberculosis.**—Ostrovsky's experience with two cases of tuberculosis of the skin in children in the Zurich clinic emphasizes the necessity for careful investigation of the skin of small children suspected of tuberculosis. Cutaneous tuberculids are a very important sign of tuberculosis, especially in breast-fed infants. He urges further the universal application of the Pirquet reaction in all children's homes or nurseries.

87. **Cholesterin Esters in the Urine.**—Lavrinovich discusses the presence in the urinary sediment of a peculiar anisotropic fat in the form of cholesterin esters. He examined the urine in 59 cases of kidney disease for the presence of these esters. Among these 59 cases there were 12 of acute nephritis and in none of these could he detect the cholesterin in the urine. In 21 cases of chronic parenchymatous nephritis, cholesterin abounded in the urine, especially when there was concomitant syphilis or tuberculosis. The findings were also positive in 3 cases of amyloid of the kidney and negative in 5 cases of venous congestion of the kidneys. At necropsy in 9 cases he found the same fat deposits in the kidney epithelium, especially in the convoluted tubules, also in the adrenals, aorta, spleen, bone marrow and liver. Such deposits indicate, Lavrinovich thinks, a long standing disease of the parenchyma of the kidneys. The discovery of cholesterin esters in the urine in doubtful cases testifies to chronic parenchymatous nephritis with a bad prognosis. As cholesterin is furnished by the food, it follows that in treatment of nephritis the yolk of eggs, brains, sweet cream and all kinds of fats had better be excluded from the diet, he remarks.

88. **Hexamethylenamin in Bronchitis and Pneumonia.**—Mikhailoff reports very favorable results of treatment of various affections of the air passages (acute purulent bronchitis, croupous pneumonia), with hexamethylenamin in 0.5 gm. doses three times a day. In his eight cases of purulent bronchitis improvement was evident in about one and one-half weeks to two weeks, with less cough, reduced output of sputum and speedy disappearance of the fetid odor, and gradual, sometimes immediate decline of the temperature. In thirty cases of croupous pneumonia, 10 per cent. of the patients died, a mortality of about the same as with other methods of treatment. No by-effects were noticed; complications, sweats, or heart weakness were rare, and the average stay in the hospital was shortened by twelve days. He thinks that this drug can be used freely in treatment of lung diseases, being a safe and a theoretically justified remedy.

St. Petersburg *medizinsche Zeitschrift*

August, XXXIX, No. 15, pp. 185-196

89. **Operative Measures in Acute Nephritis.** R. v. Kügelgen.

89. **Operative Measures in Acute Nephritis.**—Kügelgen comments on the conflicting opinions as to the advantages of

decapsulation or nephrotomy in relief of acute nephritis. A question-blank circulated in Germany two years ago showed nine authorities in favor and eight decidedly against it. He regards nephrotomy or decapsulation as indicated in acute toxic nephritis, as after scarlet fever or in eclampsia, when it is impossible to put an end to the anuria in any other way. Also in acute infectious nephritis with suppuration, suggested by pain in the kidney, rigidity of that side of the abdominal wall, extreme tenderness of the swollen kidney, and severe general symptoms. In a case reported in detail a man of 51 had always been apparently healthy until he suddenly developed signs of acute nephritis; intense pain in the right kidney region came on in the night and radiated to the right costal arch, abdomen and penis. The last urine had been dark and turbid and this was followed by anuria for thirty hours, with extreme tenesmus. At the attempt to palpate the kidney, the pain started up anew, spreading to the bladder. Roentgenoscopy showed a small whitish spot above the tenth rib suggesting a possible calculus in the kidney, but none was found at the operation which was done at once. As it proved difficult to reach the kidney, the twelfth rib was resected and the kidney brought up. The surface was very pale but after slitting and loosening up the capsule the kidney became hyperemic. The left kidney was then exposed, and was found very small and studded with cysts and cheesy foci. The capsule was incised and the wound sutured. Prompt recovery followed, illustrating anew the remarkable benefit liable from such operative measures in acute nephritis.

The operation had been undertaken on a mistaken diagnosis as there had been nothing in the case to suggest that the left kidney was pathologic. In reality the anuria was undoubtedly a reflex phenomenon from this chronically pathologic left kidney. It had not been possible to obtain any urine for examination. The operation cleared up the case at once, revealing the large, entirely anemic kidney on the right side, free from calculi, while its mate was completely degenerated and absolutely non-functioning. The ischemic kidney recuperated at once after the decapsulation and slitting, resuming its functioning within a few hours. The success of the operation was thus due exclusively to the relief from pressure. In conclusion he cites from the literature nearly a dozen analogous cases, all emphasizing the great value of decapsulation or nephrotomy in acute nephritis with anuria or uremic symptoms, and even in chronic nephritis when there are uncontrollable uremic symptoms.

Hygiea, Stockholm

LXXVI, No. 14, pp. 801-864

90 *Hydatidiform Mole with Ovarian Cysts. (Bidrag till frågan om mola hydatidosa och samtidiga luteincystor i ovarierna.) F. Westermark.

91 *Arthrodesis of the Shoulder to Correct Deltoid Paralysis; Nine Cases. G. Asplund.

No. 15, pp. 865-912

92 *Improved Technic for Induced Artificial Pneumothorax. (En ny metod att avlägsna adhärensor vid pneumothoraxbehandling av lungtuberkulos.) H. C. Jacobæus and H. Tideström.

No. 16, pp. 913-959

93 Fat in the Liver in Chronic Alcoholism. G. Engstrand.

94 Military Surgery in Sweden in the Eighteenth Century. G. Naumann.

90. Hydatidiform Mole with Ovarian Cysts.—Westermarck reports two cases of this combination. In one the ovarian tumor was operated on two months after expulsion of the mole, but the ovarian trouble may have preceded the development of the mole. In the second case the ovarian tumor was removed without knowledge of the mole in the uterus and it was spontaneously expelled not long afterward. In both cases torsion of the cystic ovary was the immediate cause for the operation, and both patients were dismissed in good condition. Both ovaries were studded with large cysts but the least pathologic ovary was left in its place, after excision or puncture of the cysts, and one of the women was delivered of a healthy child a year and a half later. This patient was an unmarried girl of 16 who had menstruated regularly until the last eight months, following a single intercourse. The uterine

hemorrhages returned every two weeks and were extremely irregular and accompanied with pains. Finally scraps of a mole were expelled with about a liter of blood and the whole mole was then delivered by expression after dilatation with an inflatable bag. Two months later she returned on account of symptoms from torsion of the cystic left ovary which was removed. The right ovary was twice the usual size and contained several cysts. There was secretion and considerable flow of milk from the breasts after expulsion of the mole, and the lactation kept up for more than six weeks.

In the second case the woman of 25 had borne a child four and a half years before. Menstruation had been regular until the last four months, and during the last two there had been almost constant uterine hemorrhage and occasional morning vomiting. Pregnancy plus torsion of a cystic ovary was the diagnosis. The ovary in question was resected and the cysts in the other were punctured. Two days later a large mole was expelled spontaneously and some scraps in the uterus had to be cleared out later. A month after expulsion of the mole the woman had epileptiform seizures—for the first time in her life.

There were thirty-eight seizures the first day and fourteen the next, with somnolency in the intervals. Under lumbar puncture, venesection, prolonged baths, morphin, chloroform, scopolamin, chloral and atropin, the tendency to convulsions was brought under control so that there were no further attacks, but artificial respiration was required for twenty minutes the second day as the patient collapsed during a bath at 33 C. The third day the patient was much agitated, with hallucinations; this condition persisted for six days, after which normal conditions were rapidly restored; the ovary that had been left rapidly returned to normal size. Westermarck emphasizes the lesson from these cases as to the harmlessness of cysts in the ovaries in connection with a hydatidiform mole. He regards the cysts as the primary trouble, responsible for the development of the mole, but claims that after the mole has been expelled the cysts retrogress.

91. Arthrodesis in Treatment of Paralysis of the Shoulder.—Asplund gives an illustrated description of nine cases in which he restored more or less satisfactory function to the shoulder by inducing arthrodesis by fixation of the head of the humerus to the glenoid fossa, the acromion and coracoid process, after thoroughly freshening all the bony surfaces. The children were between 4 and 11 but the best results were obtained in the older children, as the after-treatment is easier with such. For those under 8 he advises immobilization for six or nine months. The more the paralysis is restricted to the deltoid region the better the functional outcome. Bony union was not realized in any of his cases. The paralysis in all was a relic of epidemic poliomyelitis.

92. To Get Rid of Adhesions Interfering with Artificial Pneumothorax.—Jacobæus and Tideström have been improving the technic for direct visual inspection of the interior of the chest and abdomen, so that now the pleural cavity can be thus inspected under local anesthesia, they say, without the least discomfort to the patient. They even found it possible to resect part of a tumor in the pleura after thus locating and inspecting it. A small actual cautery has been devised for minor operations in the pleural cavity under this technic, and with it they have succeeded in severing cord-like pleuritic adhesions which otherwise would have completely prevented effectual compression of the diseased lung under artificial pneumothorax. By thus severing one coarse band they succeeded in producing conditions favorable for inducing pneumothorax in a young woman with a large cavity in one lung. The prompt therapeutic effect of the artificial pneumothorax was remarkable, the general health rapidly improving as the output of sputum became reduced. It had previously been profuse, containing numerous tubercle bacilli, but ceased almost completely after the inflation. In two other cases also reported in detail similar minor intrapleural operations were done—all without discomfort or the slightest by-effects or danger, according to their account. Roentgenograms are given of the first case both before and after the adhesion had been severed with the cautery.

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THE EDUCATION OF HEALTH OFFICERS*

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In looking over the field of preventive medicine and its future effect on this country the most striking necessity which confronts the observer is that of having trained leaders—not a few great men here and there, but leaders in cities and small communities throughout the land—men who through special training are capable of directing the formulation of health laws and of educating the public for their enforcement.

The day when the training which is given in the ordinary medical school leading to the degree of M.D. was held to qualify a man for the administration of public-health matters has passed. The field of medicine has become so broad that specialism is a necessity. In spite of this the average physician is regarded by the public as a competent authority on public-health matters, but this state of affairs is rapidly changing. It is defended by no one except those ignorant of the real necessities of the case. The magnificent work in preventive medicine which has been done by our Public Health Service and our army and navy medical services has excited the admiration and the attention of everyone, and throughout the land people are beginning to demand better-trained men as officers in the fight against disease. Ignorant and supine health officers can never excite enthusiasm in the rank and file. People demand leaders who know more than they themselves do. Our public is becoming rapidly educated, and every increase in knowledge fits it for further instruction.

Unfortunately, many of the old ideas concerning disease die hard. The public still feels, even if it does not believe, that there is something occult and supernatural about disease. There is a great reaching out after the unknown and the miraculous. Consequently, the mass of people, while ready and anxious for knowledge concerning the laws of health, absorb misinformation more readily perhaps than the truth. This is proved by the prosperity of advertising quacks and patent-medicine venders everywhere, which still persists in spite of the splendid work which has been led by THE JOURNAL of the American Medical Association, and followed by a limited number of enlightened editors elsewhere.

I feel that our medical schools, which should lead in such matters, have been slow to recognize the necessities of the situation. At present in this entire country the schools which educate men with particular reference to their duties as health officers can be counted on the fingers of one hand. It may be said with truth that owing to the multiplicity of medical schools they have had a hard time to make both ends meet, and have been unable to offer courses which would be taken by but a few men at best, and for which there has been no general demand among the members of the profession. Why has there been so little demand for such training?

This question brings us at once face to face with a condition of things existing throughout this country in regard to boards of health and health officers—a condition which has been in the past and is at present the greatest stumbling block to progress, and offers enormous difficulties which may well discourage all but the most optimistic. I refer to the domination of politics over health matters. The appointments of men to positions as health officers on merit are few and far between. States, cities, villages, and towns have their boards of health, the members of which are usually given their positions by appointment. The boards of health, or in some cases the city councils, elect the health officer. No special training is required. The man who can pull the greatest influence usually gets the position regardless of fitness. With changes constantly taking place in our city councils and boards of health, owing to our system of frequent elections, there is no certain tenure of office. The man who becomes health officer in a vast majority of cases knows that his term is to be a short one.

In addition to this there is no general feeling in this country that the prevention of disease puts dollars and cents into the treasury of a community and is a good commercial proposition. Consequently, with the exception of our large cities there is no adequate payment of men engaged in public-health work. The position of health officer is taken on as a side issue, too often only for the supposed glory it carries and the advantage it gives the practitioner in his private work. These facts are well known, but what is the outlook for their correction? I confess that the only hope I can see in the matter is a wide-spread educational campaign, which is always a slow process. Here and there encouraging signs are observed—several smaller communities banding together and appointing a whole time health officer, as has been done in the neighborhood of Chicago within the last year, though private philanthropy was the motive power.

What incentive is there for a man to give up one or two years after graduation in medicine to the further

* Chairman's address, read before the Section on Preventive Medicine at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, June, 1914.

study of public health with its attendant expense when he might be building up a practice?

While the demand for trained health officers is increasing year by year, it is confined at the present time to large and medium-sized cities. The outlook for the small communities throughout our land, of which there are many, is decidedly bad. Each year our Public Health Service is calling for such men in greater numbers, some of them are employed by commercial firms, and some drift into public service here and there, but I have not been able myself to recognize any great demand for well-trained men in this line of work, and still less at salaries which are commensurate with the expense of education.

The matter of adequate salary is one of far-reaching importance. Not only does a good salary act as an incentive toward inducing capable men to spend money on education, but it enables a health officer to give his entire time to the work in hand. I can not lay too much emphasis on this point. The whole-time health officer is a necessity. "No man can serve two masters." When the salary is small the health officer is compelled to take up practice or other lines of work in order to support himself and his family, and it is only human nature for one to give attention to the development of the work for which a fixed salary is not paid. Except by combination, whole-time health officers for small communities seem difficult to obtain, but cities and states can well afford to pay good salaries and should require health officials to devote their time to the duties of their office. The position of health officer is a man's job, and if properly attended to requires undivided attention, and all the time one can give to it.

The question has been raised as to how much prevention of disease the medical profession will stand for. Within the last year I have heard it said several times that the rank and file of the profession could not be expected to do much more, or to stand much more, in the attempt to prevent disease. I have also heard it said a number of times that medical practice had been already injured as a business by the prevention of epidemic diseases. I have always felt and still feel that the medical profession will stand, as in the past it always has, for the best interests of the public as a whole, and that it can be counted on to foster any movement for the preservation of health. I can not bring myself to believe that the lack of interest shown in the study of preventive medicine is due to the reasons stated. If, however, there is any truth in the statements which have been made, it behooves the authorities of our medical schools not only to exercise a more strict supervision over the character of the men who are admitted as medical students and to whom diplomas are issued, but also during the course of study they must see to it that the idea of prevention is thoroughly inculcated so that it becomes in the mind of the medical man a habit of thought. The whole subject should be presented in the most attractive way possible, and the opportunities which such a career offers should constantly be set before the students.

The number of problems which every health officer must face is very great, and to reach the greatest efficiency he must have a wide range of knowledge and be a man of many parts. The prevention of contagious disease is believed to be the chief duty of a health officer by the public and unquestionably this is

one of his greatest functions, but in the carrying out of this work many things are necessary which do not appear on the surface. One great task demanded of the health officer is the obtaining of proper appropriations to carry on health work. This requires not only thorough knowledge of every scientific fact involved, combined with ability to present the practical side quickly and succinctly to laymen, but demands also a vast amount of tact and patience. Since the health officer has the direction of work covering such a wide field, and in smaller communities must personally attend to it, it is necessary for him to have the training indicated in the following outline:

A good general education, including chemistry, physics, biology, and other natural sciences; bacteriology, general, medical, and as it applies to dairying and other commercial processes; infection and immunity; modes of transmission of disease; the rôle of insects; protozoology; the principles of veterinary medicine with especial attention to the diseases of animals which are transmissible to man; animal parasitology; pathology; physiology; diagnosis, especially as it applies to the eruptive and contagious diseases; examination of water-supplies, including sources, purification, storage, etc.; the analysis of sewage, its treatment and disposal; disinfectants; food and drug analysis, adulterations, etc.; engineering, including the principles of hydraulics, drainage, plumbing, heating, ventilation, lighting, etc.; rural sanitation; occupational diseases and injuries; the principles of climatology; applied hygiene, which includes actual work in public-health laboratories, the routine examination of specimens from cases of diphtheria, typhoid fever, tuberculosis, meningitis, rabies, glanders, anthrax, etc.; inspection of slaughter-houses, butcher shops, bakeries, groceries, dairy farms, milk-depots, ice-cream factories, and all places where food is prepared or distributed, hotels, barber shops, etc.; the application of preventive measures, the use of disinfectants, etc.; school and factory inspection.

In addition two other subjects must receive special attention:

1. Vital statistics, which is the bookkeeping of public health, including population, morbidity, mortality, etc. Special stress should be laid on this because it is so often neglected, and because it is so hard to make people see the importance of this branch. It is not spectacular and does not appeal to the general mind, yet is the foundation of progress in health administration.

2. Public-health administration, including the study of laws and ordinances. The importance of public-health work from the sociologic side is beginning to receive the attention it deserves. The health officer should know the foundations of sociologic science as it will enable him to carry out his work with greater satisfaction to himself and greatly increase his efficiency.

A much greater subdivision could be made, but already the list is a long one and the student approaching the subject may well be staggered at the knowledge he is expected to obtain before receiving his degree. Harvard and the Massachusetts Institute of Technology offer eighty-four courses arranged in nine groups, seventy-three of which pertain especially to public health.

In this outline I have included a large part of a medical training, and I hold strongly to the opinion

that a medical education is the foundation of work in preventive medicine. The physician has created the profession and demonstrated its possibilities. He has been the pioneer, and often in spite of the lack of special training, physicians have made very efficient health officers. Failures by physicians have been due to the fact that the public has not recognized the importance of selecting the best-fitted men for such work, and has not generally been willing to pay attractive salaries.

A degree in medicine is not absolutely necessary, although desirable, but the training is essential. I do not at all agree with those who in the last few years have advocated the view that the training a sanitary engineer receives better fits a man for work as a health officer than the training given in medical schools. It is, however, evident that the medical schools must recognize the signs of the times and give a more complete training in preventive medicine than has been the rule in the past. The medical profession must also be alive to the necessity of demanding this training, as otherwise there is danger of seeing a calling, the necessity of which they have demonstrated, pass into other hands.

In looking over the courses offered in the United States at the present time I find a decided lack of uniformity. The University of Pennsylvania offers the degree, Doctor of Public Health, after a course of instruction requiring one academic year, but only those already holding the degree of Doctor of Medicine are eligible. The University of Michigan gives two degrees—Doctor of Public Health, and Master of Science in Public Health. To be eligible for either one of these degrees the applicant must be also an M.D. For the doctorate a two-year course after the degree of M.D. is obtained is required. The University of Wisconsin gives the degree, Doctor in Public Health, open only to those holding the degree of M.D. Harvard University gives the degree, Doctor in Public Health, and in its announcement states that the degree of Bachelor of Arts or its equivalent is required in addition to the degree Doctor of Medicine. In the circular of the school for health officers recently published by Harvard University and the Massachusetts Institute of Technology in conjunction, it is announced that after completing the courses outlined in these two institutions a Certificate of Public Health will be granted. Graduates in medicine in Harvard University and other recognized medical schools are admitted on their records as candidates for this certificate. Bachelors of Science in biology and public health of the Massachusetts Institute of Technology and other recognized institutions are likewise admitted and registered as candidates. The medical degree is not a prerequisite for this certificate, but candidates are advised to obtain it before specializing in public-health work. The statement is made, "Experience teaches that preferment for position and advancement to the higher offices comes more readily to those who have a medical degree."

I would be the last one to advise careless training for men undertaking public-health work yet it seems to me that the requirements for the degree of Doctor in Public Health have been placed too high in practically all institutions, especially with regard to the language requirements. Most of the schools put the doctorate in public health on a basis with the degree, Doctor of Philosophy.

As I see the situation, we need practical health officers more than we do research men or professors. The fundamentals are well known and we need men who are well grounded in these principles, and well versed in their practical application. We have excellent journals which give in each issue abstracts from a wide range of subjects, so that to-day there is little practical information given to the world in any language which is not soon abstracted in journals printed in English. The language requirement, therefore, which is often a difficult one to meet, does not seem to be as important as it was a few years ago.

If it seems desirable to protect the degree Doctor of Public Health by maintaining the standards set, another degree with less strict requirements should be offered, with the object of training men for practical work, reserving the degree Doctor of Public Health for those expecting to do research or to teach. The degree Doctor of Public Health should never be conferred on anyone who has not already earned a doctorate in medicine.

Practically every university in the country, as well as many other schools which are less pretentious, have on their faculties men capable of teaching the fundamental branches needed by the practical health officer, and courses which are easily accessible to the men wishing to undertake public-health work should be given at a large number of schools throughout the country.

In considering a plan for the betterment of conditions it seems to me that the following points are most important:

1. There should be practically uniform requirements as to preliminary education, the training offered, and the degree given.

2. The training offered and the examinations for these degrees should be easily accessible to persons in every part of the country.

3. There should be a combined effort to bring to the attention of the profession as well as of the general public the necessity of special training in public-health matters.

Most of these objects could be accomplished if we had a central authority with power to outline courses which should be given to fit one for public-health work. In our public-health service we have a well-organized body of sanitarians fully equipped for teaching both the scientific as well as the practical branches. This service has officers in every part of the United States, in countries under our authority, as well as in foreign sea-ports. It constantly has under way investigations in inspection, sanitation and epidemiology. The Immigrant-Inspection Service with its wealth of material is under its control. It has a well-equipped laboratory in Washington with thoroughly trained men in all branches. These facilities should be thrown open to students seeking training in Preventive Medicine, or wishing to fit themselves for positions as health officers. I would suggest that this service be given authority to fix standards, to hold examinations, and to grant diplomas to qualified men. These examinations should be open to students trained at any university or college, and held at stated intervals in different parts of the country, just as they are now given by this and other services for other purposes. In this way uniformity could be obtained and a decided stimulus to the study of preventive medicine would be obtained.

TESTS OF VENTILATING PLANTS *

FREDERIC BASS

MINNEAPOLIS

The proper tests of any ventilating system designed for serving rooms of human occupancy depend ultimately on biologic facts. What qualities of the atmosphere are most conducive to the economy of the human organism? What are the ordinary variations from the ideal atmosphere and how does the organism react?

When the engineer designs a structure, he must know the forces that will tend to destroy or strain it, he must know their direction and intensity and he must know from tests the strength of the material which is to withstand the forces.

In the problem of ventilation we assume and, without doubt, correctly assume that the open air of the countryside or of the sea is the normal, most beneficial atmosphere. We know something of its characteristics in a chemical, electrical and physical sense, and we know somewhat less of the variations from the ideal atmosphere in so far as they are significant from the standpoint of the problem of ventilation.

When we attempt to study the structure, the human body, and the effects on it of varying conditions of atmosphere, we naturally find the problem of a most complex nature. I have been trying to study the ventilating problem from this standpoint during a part of the last year. It is a difficult thing for one with only a meager training in biology to attempt, but as a result of the trial, I am convinced that the ventilating engineer, in order to understand the principles underlying his work, must go beyond the mere mechanics of materials involved, and must have an appreciation of the relative biologic values which are fundamental.

In a very recent published article by one of the best known hospital architects of this country, I find the following statement: "*Without doubt*, this unknown constituent which gives the obnoxious odor or smell to bad air, such as is evident in assemblies, most noticeable in warm rooms as in our nickel theaters, is a harmful factor." Also in the same article: "Let me impress upon you that dirty air kills more people than dirty water, dirty milk, and dirty food combined." In the discussion which followed, a prominent member of the Chicago Ventilation Commission emphasized the importance of the danger of infection from air.

The general impression that the acute communicable diseases can be greatly lessened by improved means of ventilation either by eliminating direct infection or by providing air in superlative quantity, distribution, and quality, is one which seems to me to be erroneous. Direct contact, mouth spray, uncleanly personal habits, are without doubt the most fruitful causes of these diseases. Resistance to infection is perhaps both general and specific. Specific resistance may be in some cases artificially produced, but as far as my observation goes, our knowledge of immunity is comparatively small. That there is such a thing as general resistance, often spoken of by the layman as vitality, that may be reduced by unfavorable environment, is also probably true.

The presence or absence of a ventilating system cannot affect the more effective defense of the body, the specific resistance, but it is possible that the general resistance to infection may be lowered in some cases

by lack of ventilation. The demand for ventilation must be largely based on other grounds than that of the preservation of health, and it is perfectly proper that comfort and efficiency should be regarded as of sufficient importance to deserve the effort involved in providing ventilation.

There have been numerous laboratory experiments on individuals, well enough known to this audience, which indicate the relative unimportance to single individuals of the ordinary variations in carbon dioxide content or of air which may contain other substances derived from the presence of human beings in enclosed spaces.

The work of recent years by many experimenters has indicated that comfort may be secured to a great extent by a proper regulation of temperature and humidity, and that one of the proper criteria of a good ventilation system is its ability to furnish means for the maintenance of a correct bodily temperature. "Curves of comfort" have been constructed which indicate temperatures with their associated relative humidities for various occupations. The effect on comfort of air in motion is an important element.

The association of evil results with unpleasant odors is an assumption which is often unwarranted. Our sense of smell is, of all the senses, the least trained and the farthest from standardization, and the connection between offensiveness and toxicity is far from being established. It is, however, easily possible that trouble may result indirectly from offensive odors. The reflexes from such sensations as may be received from the olfactory nerves under ordinary room conditions may, of course, easily cause such irritation that a nearly normal person may feel unable to maintain his full mental efficiency. But such lack of efficiency probably comes from conscious irritation rather than from any direct toxic action. The psychologic factors in ventilation are real and important. It may be that in the ventilation of hospitals they are more important than in other buildings, for the effect of irritation of mind is more disturbing to subnormal than normal physical conditions. Prolonged exposure to irritation of this nature may result in physiologic disturbance.

During the last year I have conducted certain experiments under the direction of the New York Ventilation Commission on schoolchildren subjected to two systems of ventilation. In one room, air was supplied from outdoors, in another the air was recirculated, being continuously washed, lowered in temperature and returned to the room. Not all the characteristic odor of the occupants of the room was removed by the washing. Careful tests, both physical and psychologic, conducted by trained observers failed to show significant differences between the two groups, although the period of observation was four months. The teacher of the room in which the air was recirculated, however, complained that other teachers told her that she ought not to teach in a room in which "fresh air" was not supplied, and she said that her doctor told her it was making her ill. She did not believe that it was good for her, and she complained of feeling ill. The children were perfectly happy and entered no complaints; their physical and mental progress was satisfactory, but as they were but 9 years of age, they had not acquired the olfactory sensitiveness of the older person. The system was good so far as hygienic conditions were concerned, but it probably would not do for adults on account of the irritation resulting from odors.

* Read before the Section on Hospitals at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

The carbon dioxid content of the air of this room did not rise above 30 parts per ten thousand, showing a considerable leakage of air to and from the outside of the building. Air leakage is greater than is usually supposed.

While very humid air prevents the escape of bodily heat by evaporation, it is true that very dry air, especially when warm, may injuriously affect the mucous membranes, although I have no definite information on this point. The artificial humidification of air in cold climates is doubtless a most desirable part of a ventilating equipment. The washing of air to remove dust is of very great importance in certain cases.

If these conclusions are accepted, the requirements of a system of ventilation are that it supply air of proper temperature and humidity without offensive odors; that it supply it in sufficient quantity to maintain the temperatures and humidities within prescribed limits, and to remove offensive odors.

In order that this may be effectively done, the distribution of the inlets and outlets for the air must be carefully selected in accordance with the needs of the situation. Kitchens and toilet rooms should have outlets at the ceiling with accelerating coils as near the base of the vent duct as possible. No air should be forced into such rooms, as it might be expelled into the rest of the building through the doors.

The tests which should be made may be listed as follows: (1) temperatures; (2) humidities; (3) air currents; (4) odors; (5) carbon dioxid content, and (6) dust content.

No standardization has as yet been achieved. State and municipal legislation is almost entirely based on quantity of air, the requirements in many cases being excessive for well-designed systems of air distribution. It is of little value to pump 30 cubic feet of air per person into a room when the person can get but 3 of the 30 cubic feet on account of the lack of good distribution.

The temperatures and humidities should approximate those of the climate as nearly as possible. In England 58 degrees with 60 per cent of relative humidity is common in the schools; this would be impossible in Winnipeg in winter.

Air currents are difficult to control, as they are extremely sensitive. The control of air currents may be said to be one of the arts of ventilation. In hospital construction, except in crowded city locations, in warm climates open window ventilation may be entirely practicable throughout the year for rooms and small wards. In such cases, only kitchens, toilets and possibly operating rooms need to be ventilated by special equipment such as fans, etc. The determination of air currents is, then, of little importance. The work of Shaw in England in the determination of air currents is perhaps the most worthy of note.

In small hospitals, I have seen excellent results by having vent registers at the ceilings of the rooms connected to ducts terminating at the roof, accelerating coils being inserted. Entering air is not controlled, coming entirely from leakage.

In large hospitals such a system is inadequate. While practicable, it is likely to be expensive in operation. As the building increases in size, the problems of ventilation increase still more rapidly.

The operation of the ventilation system must necessarily be left to the operator of the power plant. It is useless to expect good service from the average engine-room operator without the direction of some person

who understands the object of the ventilating system. The operator must be under the direction of one person and not many. The system must be designed with a view to its successful operation, which should mean a careful analysis of demands which are to be made on it. These demands should rest on physiologic standards which are yet far from establishment, although their general nature seems to be well forecasted.

In conclusion, I would again emphasize the point that studies of ventilation system and ventilating equipment be made with their objects clearly in mind, namely: to secure proper temperature and humidity regulation, to keep the air in motion and properly distributed, and to prevent offensive odors from circulation.

THE IMPORTANCE OF STUDYING THE ACTUAL CONDITION OF HOSPITAL AIR *

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Few questions in air conditioning have been more extensively and even acrimoniously discussed in recent years than that of hospital ventilation. We hear on the one hand that costly ventilating plants have altogether failed and that the only way to keep a hospital in good condition is to abandon fan ventilation and admit fresh air by way of the windows. On the other hand, there are signs of a reaction in certain quarters against this view and we hear whispers that even in the most advanced window ventilated hospitals conditions are by no means always ideal, particularly at night and when the superintendent is not in the wards.

Architects and engineers, to say nothing of hospital trustees, find themselves buffeted about in a most confusing manner between confident and contradictory disputants. Ventilating plants which cost many thousands of dollars are lying idle and new hospitals are being built without any artificial ventilation at all, which, if the advocates of fan ventilation should prove correct, means a far greater expenditure for the installation of some system of air conditioning in the future.

The extraordinary thing about it all to the sanitarian is that these sweeping conclusions and far-reaching changes in policy have as a rule been arrived at without any detailed and systematic study such as seems essential in order to establish a safe basis for action. No good physician would to-day diagnose a difficult case by glancing at the patient, without taking his pulse or using the modern methods of clinical diagnosis. Yet hospital superintendents condemn their ventilating plants because a room seems stuffy, without accurate observation of existing conditions, or study of the possible remedies which might be applied, short of a major operation.

The sling psychrometer and the anemometer are as essential to the student of ventilation as are the clinical thermometer and blood tests to the practicing physician. It has been clearly shown by the elaborate experiments of some of the most eminent physiologists in Germany, England and the United States that the discomfort and the physiologic disturbance experi-

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enced in a badly ventilated room are primarily due not to chemical impurities in the air but to heat and humidity—not to respiratory phenomena, but to derangements of the vasomotor mechanism. It is therefore a first essential in studying air conditions to make careful records of temperature and humidity at various points and at various times under various conditions of occupancy. Air conditioning is, however, intimately bound up with air change and air movement, and the removal of stale odors is eminently desirable from an esthetic standpoint even if the organic compounds which produce them do not menace health. Carbon dioxid tests are therefore also of great value in determining accurately the amount of air change which is taking place, and under special conditions may well be supplemented by determinations of atmospheric dust and perhaps sometimes of bacteria.

If tests of the sort outlined above show that the air is clean and fresh and of a cool, equable temperature, one may rest satisfied. If, on the other hand, air conditions prove to be unsatisfactory, it is neither reasonable nor scientific to condemn the system in use, whether it be fan ventilation or window ventilation, without a further effort to find out the exact reason for the trouble. If rooms are overheated it may be because hand-controlled radiators have been left turned on or because thermostatic control valves have been allowed to get out of order. Or it may be because the janitor is overheating a plenum air supply. In one New York school an inspector working under my direction had a thermometer registering to 130 F. exploded by the heat of the air entering a room register. If there is too much carbon dioxid and a stuffy odor in a room, it may be because the ducts are insufficient or because the inlets and outlets are wrongly placed, or because the fans or motors are not being operated at their full capacity. Sometimes the trouble is practically irremediable without costly construction. Sometimes it can be eliminated at no cost at all with the application of a little technical skill in operation. It would seem in general wise before either installing or discarding a ventilating system to obtain scientific data as to the exact shortcomings which exist and the extent to which they could be remedied by minor alterations or more intelligent operation.

Prof. Charles Baskerville and I carried out a study of schoolroom ventilation in New York City in which our staff made over 1,800 observations of temperature and humidity, over 770 of carbon dioxid, over 680 counts of microbes and over 650 counts of dust particles, in addition to many hundreds of special tests of air distribution and a large number of measurements of air velocities. The result of this study was to show in the first place that the hectic accounts of New York schoolroom air which had been spread broadcast were, as Mark Twain said of his own premature obituary, "grossly exaggerated." Only 14 per cent. of the 1,854 temperature records obtained were over 71 F., and only 5 per cent. over 73. Of 773 carbon dioxid determinations, only 15 per cent. were over 10.5 parts and 6 per cent. over 12.5 parts. The average results for all fan-ventilated schools were about the same as for all window-ventilated schools, but individual schools showed marked deviations from the normal. The window-ventilated schools were all mediocre, but some of the fan-ventilated schools were admirable and some very poor, not apparently as a

result of defective construction, but mainly from careless operation. In one school an automatic thermometer kept in operation for twenty days never but once fell below 60 F. and never rose as high as 70. In another school, fan-ventilated like the first, the temperature reached 75 on eighteen out of twenty-eight days, and reached 80 on six of them. Only by a detailed and exact study was it possible in the first place to clear the air conditions of the New York schools in general from unfair aspersions, and in the second place, to find out that in certain particular schools there were evils to be remedied, and in the third place to indicate the importance of janitorial supervision in remedying those evils.

I am at present conducting a somewhat similar study of air conditions in a commercial establishment employing about 4,000 clerks, in the course of which my inspectors have made 2,185 temperature and humidity records, 245 carbon dioxid determinations and over 300 measurements of air velocity. The results are not yet fully analyzed, but they have already shown clearly that the building is grossly overheated and that the fault lies in large part with the disrepair into which the thermostats have been allowed to fall. We are finding that in certain ducts designed for fan ventilation, no fans have ever been installed, while in others the fans are running at only a fraction of their efficient speed. In other ducts the register openings are so badly adjusted to the present population that while some rooms receive more air than they need, others receive much less. It is quite possible that somewhat radical improvements in ventilating construction may have to be made in this building, but it would be most unwise to undertake such improvements without first finding out what the present plant is actually doing and what it could be made to do with the best operation.

I cite these cases merely to show the method of approach to this scientific problem of air conditioning and to contrast what has been done by school authorities and industrialists with the scanty evidence on which hospital ventilating plants have been defended or condemned.

Two years ago I suggested to Miss Alice L. Lake, a graduate student of mine in the Department of Nursing and Health of Teachers' College, that she attempt to gain some idea of what air conditions in New York hospitals actually were. The results¹ are distinctly significant and, like the school results cited above, point to the factor of operation as one of prime significance. Miss Lake obtained seventy-five records of temperature and humidity in six different hospitals. The general wards in all the hospitals but one were free from overheating, forty-three records out of fifty-two being below 70 F. Two hospitals in particular showed all temperatures closely controlled between 60 and 69, and it is worthy of note that of these two good hospitals, one is ventilated on the plenum system and the other by windows. On the other hand, there is one hospital in New York which is notorious for its overheating, and here Miss Lake obtained three records between 70 and 74, and two of 75 and over.

The overheating of the children's wards was much more marked, five out of eleven records being over 70 F. In one hospital the children's ward was 76 in the daytime and 57 at night, which seems a needlessly violent contrast.

1. Lake, Alice L.: *Journal of Home Economics*, October, 1913.

The air of all the hospitals was very dry, irrespective of the method of ventilation, sixty-three out of seventy-five records being below 40 per cent. of saturation. In the operating rooms the temperature of course was very high (in six cases out of twelve, over 74 F.) and the humidity correspondingly low (in five out of twelve cases, 30 per cent. or below, in none over 40 per cent.). It seems to me a serious question whether such very dry air may not promote harmful evaporation from the exposed body cavity. Artificial humidification would not only lessen evaporation but would diminish the cooling effect and so make it possible to avoid the extremely high temperatures now generally considered necessary.

My aim in presenting this paper is merely to call attention to the fact that there are serious problems involved in hospital air conditioning and that there are recognized scientific methods of attacking such problems which have so far very rarely been applied. Physiologic studies have shown that air temperature and air humidity have profound effects on the human organism, and in hospitals, in which you are dealing with persons of subnormal vitality, these effects must be intensified. In schools and factories serious attempts have been made to find out what air conditions are being maintained and how they can be improved. In many hospitals the operation of the ventilating plant is left in unskilled hands with no supervision, until bad conditions force themselves on the senses, and then the whole system in force is discarded without an attempt to find out what is really wrong.

Is it not time that this problem should be recognized as one demanding the serious scientific study of those responsible for hospital control? In an institution devoted to healing, the atmospheric condition surrounding the patients is clearly one of the most important environmental variables involved. It should not be controlled by snap judgment or by the dogmas of a fan-ventilation cult or a window-ventilation cult. The particular hospital and the particular ward should be studied and its trouble diagnosed as you study your patients to diagnose their diseases. Automatic thermographs should be installed at typical locations and their hourly records watched by some one in authority, and supplemented by occasional observations with the sling psychrometer. Once a year or so a test should be made of the whole plan with carbon dioxid determinations and anemometer measurements to see if windows or ducts are supplying a requisite amount of air. Thermostats should be overhauled and fans rated and duct velocities measured. Only by such studies can it be determined whether fan ventilation or window ventilation is efficient in a given case, and if not, how results can be improved. Only by such studies can the best future policy in building new hospitals be wisely and safely determined.

Medicine and Its Tributaries.—I like to think of medicine in our day as an everbroadening and deepening river, fed by the limpid streams of pure science. The river at its borders has its eddies and currents, expressive of certain doubts and errors that fringe all progress; but it makes continuous advances on its way to the ocean of its destiny. Very gradual has been the progress of its widening and deepening, for it is a product of human ingenuity and artifice, and only skilled engineers could direct the isolated currents of science into the somewhat sluggish stream of medical utility.—Herter.

HOSPITAL VENTILATION FROM THE POINT OF VIEW OF THE CLINICIAN *

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In general, it may be stated that the attitude of the clinician toward ventilation in hospitals consists, with a considerable degree of unanimity, in a reaction away from artificial systems of ventilation toward a system approximating as nearly as may be outdoor conditions, that is, open windows. An explanation of this attitude is not difficult to find. On the one hand, in the increasing popularity of the open-air method of treatment for many diseases, and on the other, in a diminishing confidence in the adequacy of artificial ventilating systems as usually installed and operated.

It may be worth our while to pause and examine more closely these rather far-reaching conclusions and the basis on which they rest. If as a result our confidence in these convictions is somewhat shaken, compensation may perhaps be found in a stimulus to more careful study of this whole important subject. Such a study would appear to be sorely needed.

We may accept with little fear of contradiction the clinical fact that the open air is most valuable in many diseased and abnormal conditions. Beginning with tuberculosis, this method of treatment has been successfully adopted for many other diseases, notably pneumonia, anemias, heart disease, various nervous disorders, sepsis, typhus and typhoid fever, etc. Does it therefore follow that the nearest possible approach to the open air represents the ideal condition of the hospital wards?

In certain other diseases we are accustomed to avoid the open air in our treatment, especially when any degree of exposure to cold or drafts is concerned. For example, in acute catarrhal inflammation of the respiratory tract such as laryngitis or bronchitis, or in acute kidney disease, arteriosclerosis, especially in elderly persons, acute rheumatism and the like. It is apparent, therefore, that as clinicians we wish to discriminate in the atmospheric environment of our patients.

It is this which makes the problem of ventilation in general hospitals housing patients with all varieties of disease more important than in almost any other kind of building and, moreover, more difficult. It is this also which has forced the demand for outside balconies for the use of certain patients and smaller wards to make intelligent grouping of others possible. This leaves us still, however, the problem of the general wards, to be ventilated in such a manner as to offer the most favorable conditions for the majority of patients and to do harm to none. Can this best be done by the open-window method? We hardly appear to be in a position to answer this question satisfactorily.

What, after all, is this open air on which we insist so strongly? Is it anything but the atmosphere with varying degrees of temperature, moisture and pressure in varying degrees of motion, together with certain impurities, chemical, bacterial or dust? Do not each of these factors vary with every climate or locality and in each locality with every day? If so,

* Read before the Section on Hospitals at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

which factors are the important and active ones in producing the good effects of open air which are noted both in health and in disease?

Recent observations would lead us to believe that the more important factors are the temperature, humidity and air movement.

Carbon dioxid would appear to be robbed of its former terrors, as also are the insidious so-called organic volatile poisons. Dust and bacteria in excess are always to be avoided, and certain varieties are harmful even in small amounts. In the open air as such, can we adequately control these factors, and if we could, do we know just the ideal combination we would have?

We have undoubtedly made distinct advance in the recognition that the effect of air is largely on the surface of the body as a whole and not simply due to the fact that the air is to be breathed; but do we know accurately just what this action on the body is or how it varies with the innumerable changes both in the air itself and in the human subject of different age and physical condition?

Some contributions to our knowledge we indeed have. The effect of atmospheric temperature, humidity and barometric pressure on the blood-pressure, pulse rate and body temperature both in health and in disease has been studied by several observers, notably Collis and Pembrey,¹ Leonard Hill, Howland and Hoobler,² Pomeroy,³ Gardiner and Hoagland.⁴ The results of these studies are not uniformly striking, but in general appear to show that the blood-pressure tends to rise in low temperatures and with increasing barometric pressure, and that it falls with increasing humidity and rising temperature, that the body temperature varies to a slight degree directly with air temperature and that the pulse rate is slightly but less uniformly affected by atmospheric changes. Hoobler⁵ draws the conclusions from observations similar to the foregoing that "the method of ventilation best adapted to the maintenance of blood-pressure is that which most nearly approximates out-of-door conditions." This appears a sweeping assertion when one considers how variable such outdoor conditions are.

James⁶ emphasizes the importance of marked alterations in the temperature of wards as opposed to the uniform temperature at any one level. His belief in the benefit of such alternations is based on general clinical observations and ascribed to action on the vasomotor system, but no definite evidence is presented. Both James and Thompson⁷ lay great stress on the important quality of "freshness" in outside air which they suggest is lost in artificial systems of ventilation and which is not as yet capable of detection by physical or chemical means. Thompson particularly emphasizes the olfactory sense as the best-known test of this quality.

It is difficult to conceive of just what such a quality may be which is not measurable in terms of temperature, humidity, air quantities and movements or detectable impurities, and its existence is certainly questionable. Such assumptions are liable to divert attention

from the important problem of attempting accurately to analyze atmospheric conditions as they affect the human body and to record these effects in definite terms of physiologic response.

The studies on temperature, blood-pressure and pulse rate already quoted are steps in this direction, but are not entirely satisfying.

I have attempted to duplicate the results obtained by Howland and Hoobler in children with whom change of blood-pressure followed promptly change from cold outdoors to warm indoors and vice versa. My observations were with adults with various diseases, and the changes of blood-pressure were far from being uniform or convincing. It is possible that the age of the patient is an important factor. In other observations in normal young adults made in collaboration with Prof. F. S. Lee for the New York State Ventilation Commission, the effect of high temperature (86 F.) and humidity (80 per cent. relative) over a period of four hours, was shown by a definite rise in pulse rate and less marked diminution of blood-pressure and little or no change in body temperature. Similar observations at moderate temperatures (68 F.) and low humidity (50 per cent. rel.) showed a distinct fall in pulse rate and temperature with little change in blood-pressure.

In another series of observations the subjects after the four-hour exposure to heat and humidity were quickly exposed to cold air (from 60 to 65 F.) and drafts from fans; as a result, pulse rate fell and blood-pressure rose. These observations go to corroborate those of Howland and Hoobler as well as others, and would suggest that the clinically good effect of cool and dry air may be measurable in terms of pulse rate, blood-pressure and body temperature.

Such studies, however, are mere beginnings and point the way to many unsolved problems before we can state with definiteness just how open or fresh air produces good effects and how we should differentiate to best advantage in the selection of cases and in the relative importance to be placed on the various factors in the air itself. We need some such data before we can say that all we need in ventilation is to open the windows and let in the air. The outside air may be cold when our patients need it warm, it may be dry when they need it moist and vice versa, and moreover, the dust problems of open windows cannot be overlooked.

Do we know just the optimum degree of heat, moisture or velocity of air movement? We have general ideas of the bad effect of very high temperatures and humidities, but do we know in reducing these when to stop to best advantage and do we know really very much about the drafts and their effect?

For years ventilating engineers have been asking us what condition of air we want, and we have no reply but "fresh air." This evidently may mean any variety of that very changeable article. It may well be that open windows are better than artificial systems, but we cannot say so definitely until we can state just what we are trying to accomplish. When this is stated the problem becomes one of engineering and economics.

But there are other problems involved than the mere air itself and its method of action. Important among these is that of air distribution. Recent advances in our knowledge tending to show that the action of the air is particularly on the surface of the body increases this importance. By open window ventilation are we

1. Collis and Pembrey: Jour. Physiol., Nov. 20, 1911.

2. Howland and Hoobler: The Effect of Cold, Fresh Air on the Blood-Pressure in Pneumonia of Children, Jour. Dis. Child., May, 1912, p. 294.

3. Pomeroy: Interstate Med. Jour., 1911, xviii, 731.

4. Gardiner and Hoagland: Tr. Am. Climatol. Assn., 1905.

5. Hoobler: Trans. Fifteenth Internat. Cong. Hyg., iii, 116.

6. James: Am. Jour. Med. Sc., November, 1906.

7. Thompson: Med. Rec., New York, Feb. 9, 1907.

not apt to get too much air for some patients and too little for others? Can we regulate the problem of drafts near the window and pockets of stagnant air in the corners?

I myself do not feel sure that the so-called drafts are as much to be dreaded as we are accustomed to think. Although our text-books ascribe some eighty odd diseases and conditions directly or indirectly to exposure to cold and drafts, yet recent studies tend to show that these conditions are usually due to bacterial infection in which exposure plays no or only a minor part. Chodounsky⁸ and others have made very memorable investigations in this direction, and our own observations on young men exposed to chilling and drafts from fans after long-continued exposure to high temperatures demonstrated nothing but agreeable effects.

This whole question of the effect of low temperatures and drafts on the body needs more careful study.

Then again it is evident that open window ventilation can never be automatically regulated. In wards this regulation would naturally devolve on the nurses, although the physicians should of course supervise it. With the multitude of other duties can we trust physicians and nurses systematically to employ the care and intelligence necessary? This depends on a more definite knowledge of the conditions we really wish to obtain and on greater attention to the air conditions of the wards than we are at present accustomed to observe.

But with all the possible difficulties that we are able to perceive in window ventilation what are we to think of its alternative, the artificial system?

It is hardly too much to say that as these systems have usually been installed and operated they have been most unsatisfactory to the clinicians and hardly less so to the ventilating engineers themselves. As already stated, the fault is partly that we have not known just what conditions to demand, and consequently the physical basis of air conditioning has predominated. Moreover, intelligence in the operation of such systems has been too frequently noteworthy by its absence.

There can be no doubt that the strictures of Thompson, James and others are largely deserved; but can we entirely place the blame on the artificial system *per se*?

The physiologic method of studying ventilation must replace the purely physical, or the two must be used in conjunction and in intelligent harmony, if we are to obtain the best results, and all of this means much additional study, on which we have only just begun. Certain it is, however, that even now the artificial system alone seems insufficient and that periodic flushing of wards with air from open windows seems reasonable and necessary. But on the other hand, it seems probable that open windows alone will be unsatisfactory.

That the open air with all its variations when directly admitted to the wards may by no means always prove of just the desired condition, and that its proper distribution to all points of the ward may be most difficult, seems very probable. It would appear, therefore, that at present a combination of these two so-called systems is desirable, especially

when we remember that in winter a heating system is always necessary and that ventilation is a natural corollary of the heating problem.

After all, however, the whole question falls back on the unfortunate fact that really we do not know. It would therefore appear futile and foolish to argue dogmatically about ventilation until some of the fundamental problems involved in the effect of atmospheric air on the healthy and diseased human body are better understood.

The present discussion represents merely an effort to state the situation in the hopes of stimulating further research into this important branch of sanitation in its relation to our more strictly medical problems.

18 West Fifty-First Street.

LABORATORY EXPERIMENTS WITH AIR*

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NEW YORK

I take it that it is my part in the present symposium to present a summary of what laboratory investigation has contributed to our knowledge of air in its bearing on the problem of ventilation. In so far as the contributions of the laboratory are conclusive they may be expected to serve as a guide to the architect and the ventilating engineer in devising means to provide human beings, living within buildings, with air that is fitted for human use. Air may be rendered unfit by a great variety of agencies. For our present purpose it is desirable to limit our consideration to the unfitness that results from the immediate presence of human beings.

That human beings vitiate the air surrounding their bodies has been known from earliest times, and at different stages in the progress of investigation such vitiation has been ascribed to different factors. More than a century before the discovery of oxygen, Mayow¹ ascribed the death of animals confined within closed spaces to their consumption of the "nitro-aerial spirit" of the air. The presence in expired air of "noxious vapors" was also early recognized. Later, nitro-aerial spirit became oxygen, and noxious vapors carbon dioxide, and the idea early became prevalent that lack of the one constituent and accumulation of the other were together responsible for the bad effects of rebreathing air that had once been breathed by human beings. Throughout the nineteenth century, many laboratory experiments were performed relating to the relative rôles played by the deficiency of oxygen and the increased quantity of carbon dioxide, and there resulted much difference of opinion. But, notwithstanding the inadequacy of its proof, the belief became firmly established that both of these gases, but more especially the carbon dioxide, are the chief agents in producing the evil effects of the air of crowded assemblies, and this idea is even now widely prevalent. Meanwhile, early in the nineteenth century, the notion arose that expired air contains a poisonous sub-

* Read before the Section on Hospitals at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.
1. Mayow: *Tractatus quinque medico-physici*, Oxford, 1674.

8. Chodounsky: *Erkältung als Krankheitsursache*, Wien and Leipsic, 1911.

stance, other than carbon dioxid, which can be detected by the sense of smell. Gavarret² in 1851 seems to have been the first to subject this idea to the test of experiment, and his work seemed to establish its validity, since he found that animals confined within a closed space died, although oxygen was supplied as fast as it was consumed and carbon dioxid was removed as fast as it was formed. A few others obtained analogous results, notably William A. Hammond³ in America in 1863. In 1887 Brown-Séquard and d'Arsonval⁴ of Paris gave a great impetus to investigation of this theory by reporting confidently their experimental results in which the expired air of men and dogs, condensed and injected into animals, seemed to produce symptoms of intoxication, and they defended vigorously the presence of a toxic organic substance in such air. Although many subsequent researches by others contradicted their conclusions, the theory of the presence in expired air of poisonous, volatile, organic matter, probably protein in nature, came to be widely accepted, and doubtless is accepted still in many circles. Du Bois Reymond gave the name "anthropotoxin" to this substance.

It thus seemed to be firmly established, by what seemed to many persons accurate laboratory investigations, that the air problem involved was a problem of chemistry, that the physiologic problem was a problem of respiration, and that the ventilating problem was a problem of removing chemically impure, and supplying chemically pure air in sufficient quantities to supply the needs of the individual.

But this calm of supposed scientific certainty was never so universal throughout the laboratories, and in recent years it has become so disturbed that the subject of what constitutes purity in air and to what are due the evil effects of living in impure air has assumed a new aspect. In the first place, faith in the adequacy of lack of oxygen and accumulation of carbon dioxid has been practically abandoned in the laboratories. Even as early as 1842 Leblanc⁵ found that in crowded assemblies the oxygen content of the air rarely falls below 20 per cent. and in 1849 Regnault and Reiset⁶ proved experimentally that oxygen can be diminished to 10 per cent. in inspired air before respiration becomes quickened. Müller⁷ in 1858, Bert⁸ in 1870, Speck⁹ in 1878, Friedländer and Herter¹⁰ in 1879, and others obtained similar experimental results. As to carbon dioxid, too, Regnault and Reiset, Müller, Friedländer and Herter, and others demonstrated that large percentages of the gas, much larger percentages than exist in crowded rooms, can be inspired without marked effect. Von Pettenkofer,¹¹ too, in 1862, seems to have had a clear idea that neither the decrease of oxygen nor the increase of carbon dioxid that occurs in ill-ventilated places is sufficient to produce the symptoms observed in the occupants of the rooms. It was he, nevertheless, who contributed the thought, ever

since potent, that the amount of carbon dioxid that is present may be regarded as a convenient index of the harmfulness of the air. However valuable this suggestion may have been at the time, in the light of present knowledge its usefulness has ceased and it ought, I believe, to be discarded. The later work of Hermans, Flügge, Paul, Hill and others now seems to eliminate oxygen and carbon dioxid wholly as factors in the situation except under very unusual circumstances.

Furthermore, a number of notable investigations have rendered the theory of an atmospheric, organic poison untenable. Here it is only necessary to mention a few of the prominent names of investigators, such as Hermans¹² in 1883, Haldane and Smith¹³ in 1892, and Billings, Mitchell and Bergey¹⁴ in 1895. In 1911 Rosenau and Amoss¹⁵ attempted to revive the idea by experiments in which guinea-pigs were supposed to be sensitized anaphylactically by the injection of the residue of condensed expired air; but Weisman,¹⁶ in a careful repetition and continuation of their experiments, has been unable to confirm their results. The matter may therefore, I think, be regarded as finally settled that expired air contains no volatile, toxic organic constituent.

Simultaneously with the abandonment of oxygen, carbon dioxid and anthropotoxin, a totally different way of looking at the physiologic problem has appeared. In 1883 Hermans¹² of the Hygienic Institute in Amsterdam, convinced of the inadequacy of the oxygen and carbon dioxid theory, finding by his own experiments no evidence of the existence of an organic poison and observing that his own bodily temperature in crowded theaters and churches rose from 0.3 to 0.6 C., put forward the suggestion that the evil effects of air that has been vitiated by human beings are due simply to the inability of the body to cool itself because of the surrounding elevated temperature and increased moisture. This suggestion was not discussed by him in great detail and was not supported by experimental evidence of his own, but it provided the much needed germinal thought that has since developed into the most rational of all proposed explanations of the observed facts.

Briefly stated, this explanation is as follows: Living beings constantly produce and give off to their environment an excess of bodily heat. This heat must be constantly carried away from the body and is carried away partly through the lungs in the expired air, but chiefly through the skin by the processes of radiation, conduction through the clothing and the evaporation of perspiration. It is obvious that to insure this necessary and healthful removal of heat there is needed an atmosphere about the body that is neither too hot nor too humid. If it is too hot radiation and conduction are prevented; if too humid, the evaporation of perspiration is interfered with; and if the two conditions exist simultaneously the result is a rise of bodily temperature with concomitant interference with the body's well-being. According to this conception the air problem involved is a problem of physics, and not of chemistry; the physiologic problem is a problem that begins with the skin and not the lungs; and

2. Gavarret, Cited by Weisman (Footnote 16).

3. Hammond: A Treatise on Hygiene with Special Reference to the Military Service, Philadelphia, 1863.

4. Brown-Séquard and d'Arsonval: Compt. rend. Soc. de biol., 1887, iv, 814. This article was followed by several others by the same authors.

5. Leblanc: Ann. de chim. et phys., 1842, v, 223.

6. Regnault and Reiset: Ann. de chim. et phys., 1849, xxvi, 299.

7. Müller: Liebig's Annalen, 1858, pp. 107, 257; Sitz. Ber. Wiener Akad., 1858, pp. 33, 99.

8. Bert: Leçons sur la physiologie comparée de la respiration, Paris, 1870.

9. Speck, quoted by Hill, Flack, McIntosh, Rowlands and Walker (Footnote 23).

10. Friedländer and Herter: Ztschr. f. physiol. chem., 1879, iii, 19.

11. Von Pettenkofer: Liebig's Annalen, 1862-1863. Suppl. Vol. 2, p. 1.

12. Hermans: Arch. f. Hyg., 1883, p. 1.

13. Haldane and Smith: Jour. Path. and Bacteriol., 1892, pp. 1, 168, 318.

14. Billings, Mitchell and Bergey: The Composition of Expired Air, Smithsonian Contrib. to Knowl., Washington, 1895, p. 989.

15. Rosenau and Amoss: Jour. Med. Research, 1911, pp. 25, 35.

16. Weisman: Biochemical Studies of Expired Air in Relation to Ventilation, Inaug. diss. Columbia Univ., New York, 1913.

the ventilating problem is a problem of maintaining the proper temperature, humidity and motion of the air.

That this explanation of the matter in question is correct can, I think, hardly be doubted in view of the abundant evidence in its favor that has emanated from the laboratories. To speak the names of the chief contributors is to mention some of the prominent of the world's physiologists and hygienists. Rubner and von Lewaschew¹⁷ of Berlin have contributed very exact data on the general action on the human body of moist air, the relation between the moisture and temperature of the air and the elimination of water and carbon dioxid from the body, and the adaptability of man to high and low temperatures.

The year 1905 was fruitful in contributions. Then began the many studies of Haldane¹⁸ of Oxford and his pupils on the physiologic action of hot and humid air, which have been pursued partly in the laboratory and partly in industrial works, such as the tin mines of Cornwall and the British cotton-weaving sheds. Haldane has insisted, probably correctly, that the ill effects produced by the air of ill-ventilated places are dependent not simply on the temperature as indicated by the dry-bulb thermometer, or on the absolute or relative humidity alone, but on the temperature as indicated by the wet-bulb thermometer. "If this exceeds a certain point (about 78 F. or 25.5 C.)," he says, "continuous hard work becomes impracticable; and beyond about 88 F. or 31 C. it becomes impracticable for ordinary persons even to stay for long periods in such air, although practice may increase to some extent the limit which can be tolerated. In moving air, on the other hand, the limit is extended upward by several degrees." In ordinary living rooms a wet-bulb temperature of 60 F. is probably the most rational one.

In the year of Haldane's first article, 1905, there appeared also several very valuable and suggestive contributions by the hygienist Flügge¹⁹ of Breslau, and his assistants, Heymann,²⁰ Paul²¹ and Ercklentz.²² The experiments of these investigators were conducted on human beings, some in health and others in various pathologic conditions, who were enclosed within a ventilation chamber and subjected to various conditions of temperature, moisture and movement of air. The results emphasize very strongly that the evil symptoms ensuing on confinement in closed rooms are due to the heat stagnation and the inability of the occupants to "unwarm" their bodies. More recently Leonard Hill²³ of the London Hospital and his colleagues, Flack, McIntosh, Rowlands and Walker, have performed similar experiments, also on human beings, and have obtained similar and striking results.

I have thus mentioned the more prominent of the many investigations that have emanated from the laboratories in this much-discussed field in which pure science and applied science meet. The main features of the laboratory contributions which may be regarded, I think, as now fairly established are that the evil effects of living in the air of crowded, ill-ventilated rooms are due, not to lack of oxygen, not to accumula-

tion of carbon dioxid, not to the presence of a volatile organic poison, but to excessive heat, excessive humidity, and lack of adequate movement. Notwithstanding the fact that more than thirty years fruitful in experimental confirmation of it have now elapsed since this doctrine was first enunciated, it is strange how little it is yet known outside the laboratories and how prevalent are the notions that carbon dioxid and a mysterious organic poison are the evils to be guarded against.

If I were to criticize in general the laboratory investigations my criticisms would be three: first, that the investigations have been confined too much to the study of extreme conditions, in contrast to the conditions of ordinary life; secondly, that the individual experiments have been continued for too brief intervals; and thirdly, that they have not shown, beyond a few of the more easily demonstrated bodily functions, such as rise of bodily temperature, on what functions of the complex living mechanism the unfavorable air conditions act deleteriously.

The newest of all the many investigations in this field, that of the New York State Commission on Ventilation, is endeavoring to obviate such criticisms by making a more profound study of the matter than has yet been undertaken. We possess a ventilation chamber of a capacity of 1,150 cubic feet, which is provided with apparatus by which the air of the chamber may be confined and rebreathed, or renewed at any desired rate, may be maintained at any desired temperature and humidity, may be kept quiet or in motion, may be removed, washed and recirculated, and may be given a desired chemical composition. In this chamber from one to a half dozen persons may be confined for any desired number of hours. On certain days they engage in definite mental tasks, on other days they perform a definite amount of physical work, under a definite combination of air conditions. By the quantitative study of a considerable number of bodily functions, such as bodily temperature, the sensitivity of the skin, blood-pressure and pulse rate in the reclining and standing positions, the relation of oxyhemoglobin to oxygen, the respiratory exchange, the size of the dead space of the air passages, carbohydrate and protein metabolism, the production of heat, the duration of digestion, and various phenomena of the urine, an endeavor is being made to learn in what respects, if any, the physiologic functions and the mental and physical efficiency of the individual are altered by alterations in air conditions. This work is now being actively carried on, but the results are not yet ready for publication.

In this connection I may be permitted to mention a series of experiments which I have recently performed in my own laboratory in collaboration with Dr. E. L. Scott, and which are not yet completed. I have been interested to know whether the apparent physical inefficiency of the individual in an atmosphere of high temperature and high humidity can be objectively demonstrated as a muscular phenomenon. Because of the necessity of using isolated muscles, we have found it most convenient to use cats as the subjects of experimentation and have confined them within a small ventilation chamber for a period of six hours each. An abundant supply of outside air has been sent through the chamber and the only change in conditions has been that with certain animals the temperature has averaged 21 C. (69.8 F.) and the humidity 54 per cent. With

17. Rubner and von Lewaschew: *Arch. f. Hyg.*, 1897, xxix, 1.
18. Haldane: *Jour. Hyg.*, 1905, v, 494. Haldane, Pembrey, Collis, Boycott and Cadman: *Rep. Dept. Com. on Humidity and Ventilation in Cotton Weaving Sheds*, London, 1909 and 1911.
19. Flügge: *Ztschr. f. Hyg.*, 1905, xlix, 363.
20. Heymann: *Ztschr. f. Hyg.*, 1905, xlix, 388.
21. Paul: *Ztschr. f. Hyg.*, 1905, xlix, 405.
22. Ercklentz: *Ztschr. f. Hyg.*, 1905, xlix, 433.
23. Hill, Flack, McIntosh, Rowlands and Walker: *The Influence of the Atmosphere on Our Health and Comfort in Confined and Crowded Places*, Smithsonian Misc. Collections, 60, 23, Washington, 1913.

are made against sanitary principles in such cases where we do not, as yet, know?

Is it not time that some attempts were made to prevent these mistakes which have been recognized as such, and also is it not time for investigations to be made, in order to answer numerous questions relating to hospital construction?

This paper was not prepared to obtain a lengthy discussion. A subject of this magnitude cannot be scientifically covered in a paper to be read in fifteen minutes. I have only stated a few facts, pointed out a few mistakes and shortcomings of the hospitals of to-day, while there are hundreds and more to be considered. It is of no benefit to our hospitals if we indulge here in long arguments and discussions about where to lay the blame for the existing conditions.

I am of the sincere opinion that your Association has it within its power to do an everlasting good work of direct benefit and immediate influence on the present hospital construction.

The committee of 1786 of the Paris Academy of Sciences laid down the first laws for hospital construction and by its reports did such splendid work that it is still of the greatest influence to-day. Is it not possible to continue this good work and bring it up to date?

Could not a committee be nominated by your Association, consisting of prominent and able men who would carefully prepare a program, a complete set of rules for good hospital construction?

This program should be as liberal as possible in its limits and its scope, in order to avoid conflicts with either shortness of funds or difficulties of location. Good hospital construction could be, to a great extent, standardized.

A list of the absolute requirements and a list of positively forbidden methods could be given as a nucleus. This list could eventually, through your combined efforts, be enacted into law in every state, thus forever banishing most flagrant violations of hygienic principles. This committee could go further still. A great many points in hospital planning and construction need investigation and study, in order to state positively what is to be forbidden or what is to be recommended.

Your committee could, therefore, in its report point the way how to obtain the proper solution and how to decide the unanswered, unsolved problems. The limitation and scope of mechanical ventilation is only one question out of many, although a very important one.

There are, however, many others, for instance, limitation of hospital equipment; the extent and limitation of ward service rooms; the standards for sanitary floor and wall construction; a list of the most desirable materials and of such materials which under certain circumstances may be allowed, although not desirable, etc.

In each of these problems cost is the main factor. Structural or mechanical difficulties play the next important part. The entire world would be benefited by the work of such a committee, and if this Association were willing to take up this work, praise and credit would be given to it in later history.

With an open mind as to the importance of the hospital of to-day, every one of you will have a clear understanding of the importance of the hospital of the future. In order to combat disease successfully, the importance and influence of the hospital will increase

from year to year, not on account of charitable principles, but from the point of view of self-defense and self-protection, which, as I have stated before, in my opinion have been the true origin of the first hospital.

ABSTRACT OF DISCUSSION OF SYMPOSIUM ON AIR PROBLEMS IN HOSPITALS

ON PAPERS OF BASS, WINSLOW, MILLER, LEE, OHMES
AND VAN DER BENT

MR. EDWARD F. STEVENS, Boston: I have given a great deal of thought to the subjects of heating and ventilation, although I also found no absolute and definite solution of the problem. When planning for my hospitals I try to bear in mind what my old professor once told me, that the ideal temperature—he being a New Englander—is that of a pine forest in some of our New England towns on a beautiful June day. If we can gain some such temperature for our hospital wards we are, perhaps, approaching a solution. The ideal June day would not have an exact temperature of 68 or 70, but it would be fluctuating, with occasional movements of air. Is it not reasonable to suppose that if our patients in the wards should have the condition which nature has given us on ideal days in June we should be getting somewhere near the ideal condition? Of course, as has been brought out, the different sections of the country demand entirely different treatment as to the conditions of the air. I have not found it necessary in New England and the middle South, for instance, to use forced air. I have been able to accomplish good results by taking the air in at either the windows or doors, but always by exhausting the air from the room. The most important thing is to get the foul air out, for if we give the outside air a good chance it will come in. If we have a forced ventilation we should also have a duplicate natural ventilation. I have been in many hospitals where the air did not seem to be good. The superintendent would say that the fan did not seem to be working. The engineer apparently had not provided any natural ventilation. It is most important to get the air out of the toilets, utility rooms, sink rooms and everything of that sort, making the fans for that sufficient in volume, or perhaps putting the rooms on separate fans so as to be sure that the foul air is taken care of without being forced into any other part of the building. I believe the operating suite should have a separate system from the other part of the hospital. Mr. Van der Bent's history of hospitals suggests a standard which might be met. He speaks of the use of wooden floors and such things as many years ago were condemned. Why should not the hospital people be guided by a specialist just as we go to a specialist in the medical profession? He diagnoses the case and gives us a prescription. If we do not follow it, it is our fault if we do not get relief. Shouldn't we insist on advising our clients what we consider are the best materials and leave it to them? If they do not care to follow our advice the results may not be so satisfactory as they might otherwise.

MR. C. E. A. WINSLOW, New York: The work of the New York State Commission on Ventilation is largely devoted to general and fundamental mechanical and physiologic problems. Such a committee as was just suggested on the special practical problems of hospital ventilation would be of great value. Such a committee and the New York State Commission might cooperate to great advantage. Possibly the conclusion might be drawn that Professor Lee and I were in disagreement as to two points in which we are really in complete accord. Professor Lee spoke of the fact that carbon dioxid does not indicate poison in the air, which is of course quite true. I use the carbon dioxid test merely to see how much air change there has been. It is a valuable test for this purpose to show how far the air in the room has been changed. The other point is with regard to the question of a constant as opposed to a variable temperature. I spoke of it as an achievement to maintain the temperature of a school between 69 and 70. This is desirable in order to prevent overheating, but a change to a lower temperature can at any time

be obtained by throwing open the windows. It is perfectly simple to get these variations, which I think are very desirable. I hope those concerned with hospital management will give thorough consideration to the question of cooling. So far as we know the heat of summer is far more harmful than the cold of winter. We have much more evidence of the pathologic effects of heat than of cold. It is as practicable to be cool in summer as to be warm in winter, although somewhat more expensive. Mount Sinai Hospital has taken the lead in providing a cool room for the children in summer. I think that ought to be developed. I hope we shall ultimately have central points in the great cities where cool-day nurseries will be located.

MR. ARTHUR K. OHMES, New York: My experience in various buildings would show that there is no "constant temperature" and that the most suitable temperature depends to a certain extent on the outside temperature. The best inside temperature in the winter months is from about 68 to 70 degrees, but the best inside temperatures in the summer months are considerably above this temperature, as has been given for the New York Stock Exchange and which inside temperatures are best liked by most of the members. We have had cases in factories when with 65 degrees inside temperature and 85 degrees outside temperature the workmen spoke of going on strike because it was too cold. They considered that their health was being impaired. We have also seen cases in which people have fainted away in working-rooms maintained at 60 degrees when 90 degrees prevailed outside. In my opinion there is no such thing as a "constant inside temperature," and when a man may be perfectly healthy and happy in 65 or 60 degrees temperature in the winter months he may be most unhappy in the same temperature when it is 90 degrees outside. There are physical reasons for this which physicians should know.

MR. T. J. VAN DER BENT, New York: Several years ago I visited the Belfast Fever Hospital, where the wards practically have no windows, only small windows and a door opening on a balcony at the rear end of the ward. No side windows existed. This hospital has existed for ten or more years. The patients get only forced ventilation, air being supplied by mechanical means. Is there on record any information about that place? Does that hospital stand out as an unsatisfactory or bad hospital? In the doctors' and nurses' section the windows can be opened; in the patients' rooms windows cannot be opened.

DR. BYAM HOLLINGS, Boston: From time to time the question comes up with us as to how to overcome the foul air. One solution has been to open the windows. Whether the fans and the ducts were the cause of our foul air I cannot say, neither can I say whether the engineer was backward in his care of these things. These papers have brought these matters to a focus so that those of us who are not thoroughly skilled in the mechanical side of ventilation may be guided to meet the trouble.

DR. CHARLES H. COOK, Natick, Mass.: I am not an expert but I know how many times excellent reports and papers are simply embalmed in the secretary's records. An excellent idea would be to appoint a committee to embody these ideas, to standardize them, to get legislation, or attempt to do something. I do not expect to live to see this movement materialize in anything very definite, but I would like to see it begin. I would like to see these papers and the discussion serve as the foundation of a movement that would be far-reaching. I would not favor the appointment of a committee from the floor. A report might be made at some future meeting as to the line of work. I know it takes time, but only in that way can results be obtained.

DR. H. M. BRACKEN, Minneapolis, Minn.: I happened to speak to Dr. Hornsby just now on a matter that has a bearing on this last suggestion, namely, a committee. There is no reason why a committee should die. If good work is to be done a permanent committee is needed. This can be appointed by the Council on Health and Public Instruction. There is a commission with which Mr. Winslow is quite familiar working along this line. This commission is quite liberally supplied with money, I believe. I would suggest that the

Council on Health and Public Instruction be requested to take up this hospital question. It could appoint a committee that would give the subject special attention.

DR. T. A. SHALLON, Philadelphia: With reference to the natural method of ventilating, especially for certain cases, we, in the Jefferson Hospital, tried the experiment of a glass solarium. This has been an absolute failure. We had it constructed in three divisions, so that the glass could be partially or totally removed. We found on hot days, even though the sun was not shining the glass would absorb a certain amount of heat, making it practically unbearable for the children. For that reason we have had to construct stands for ice in the center of the room and to cause the air to circulate around the ice to make it habitable for the children.

DR. JOHN A. HORNSBY, Chicago: Sears, Roebuck and Company, in Chicago, employ a good many thousand clerks, and the working-room windows cannot be opened. They have mechanical ventilation. The Swift and Company packing plant depends wholly on mechanical ventilation. They are really putting into practice Professor Winslow's suggestion as to keeping cool. Under the rules of the Association the scientific sections exist solely for the purpose of discussing scientific matters. So, when I took up the question of the study of air problems with the secretary of the Association and the secretary of the Council on Public Health it was agreed that we should make some sort of recommendation to the Council at this meeting. Dr. Baldwin unwittingly violated the fundamental rules of this Association. He appointed a committee composed of Messrs. Van der Bent, Winslow, Lee, Bass, Ohmes and Miller. The appointment meant simply the creation of some sort of nucleus, and it grew into this symposium, the intention being to ask the Council for the appointment of a mixed permanent commission to study not only the air problems in hospitals, but also air problems of a nature similar to those operating in hospitals. It was not to interfere with Mr. Winslow's commission working in New York, and not to duplicate any of the work being satisfactorily done in Chicago by the commission on ventilation. I would like to have this commission that Dr. Baldwin appointed maintained. I think the gentlemen who are members of that committee should add to their number such men as Ransdell of the Navy, who has done that brilliant piece of work on air problems in battleships, and Kerr of the public health service, and then that these men should go to the Council on Health and Public Instruction and ask for recognition or appointment at the hands of the Council with a view to giving weight to its proceedings so far as the medical profession of the country is concerned. Added to that list should be such men as Hoover of Cleveland, Joseph L. Miller, Chicago, Dr. Bracken, in public health work up in his country, and George B. Young, health commissioner of Chicago. There are phenomena that we realize and that we cannot explain at all, and, as a sort of side line to the other men's studies in this problem, if such men as Miller, Hoover and Goldwaller could coordinate their observations it would be helpful to such men as Professors Lee, Bass and the others.

MR. C. E. A. WINSLOW: I did not understand that there was any committee as yet. We were simply asked to take part in a symposium. I should not feel that this group would have the right to ask the Council to appoint them. I think the matter had better be taken up freshly, without reference to the contributors to this symposium.

DR. HORNSBY: Dr. Baldwin's conspiracy included the members of the symposium. The work would have a little better standing, coming from the American Medical Association than if it were an independent body. I think the thing to do is to make representations to the Council. Perhaps it would be better for the officers of the section to ask for a continuation of this commission.

The Prerequisites for the Study of Medicine.—He who purposes to study medicine should have in high degree three gifts, not one of which is common among mankind, yet all of which he must have: the power of reliable observation, intellectual endurance; loyalty.—Minot.

CHRONIC FOCAL INFECTION OF THE
NOSE, THROAT, MOUTH AND EAR*

JOSEPH C. BECK, M.D.

CHICAGO

Chronic focal infection may be located anywhere in the body, but there are certain anatomic structures which are most frequently affected. These are the structures which possess recessions or pockets and which communicate with the external world. There are, however, some that do not have these characteristics and still may be the seat of focal infection with the whole train of symptoms of chronic toxemia and changes in consequence thereof. The most frequent sites of chronic focal infection may be divided into groups as follows:

1. Recessions or Terminal Pockets: meibomian glands; lacrimal glands; nasal accessory sinuses and mastoid cells; tonsils and adenoids; salivary glands and ducts; pulmonary alveoli and bronchi; gall-bladder and ducts; pancreas and ducts; appendix; uterus and fallopian tubes; prostate and seminal vesicles; pelvis of kidney, ureter, bladder and urethra; skin-glands, as sweat and sebaceous; mucous glands.
2. Tubular Structures or Ducts: gastro-intestinal tract; tear-duct.
3. Glandular or Parenchymal Tissue: lymphatic glands; compound lymph-glands, as Peyer's patches, lingual tonsil; liver, pancreas, spleen, muscles; ductless glands, as thyroid, adrenals, thymus and hypophysis.
4. Endovascular Tissue: endocardium and intimas of arteries and veins; lymph-vessels and lymph-spaces.
5. Serous Membranes: peritoneum; pleura; pericardium; synovia; perineurium; dura.
6. Pathologic Tissue: cavities in teeth; alveolar or apical necroses, and death of pulp, with or without alveolar fistulas; recession of gums, as pyorrhea; abscess or necrosis elsewhere in the body; infection about nails, and hair follicles.

While the subject can not be considered complete and comprehensive without considering all the groups, as mentioned above, it shall be my aim to devote myself to the chronic focal infections of the mouth, nose, throat and ear only, first, in so far as they may influence the other focal points of infection, secondly, the secondary toxemia and changes in the tissues and fluids of the body.

Before taking up the subject of infection one should study the question of body resistance and immunity, in other words the normal condition.

RESISTANCE

When is one in perfect health, and how may this condition be recognized?

In my opinion, perfect health is that state of the organism in which all the functions of the body are carried on without hindrance, and the body-weight is normal and remains so. Exposure to infection and other forms of disease (barring accident and senility) do not readily develop in such individuals. Health is further characterized by a normal mental state, there being no anger or worry manifested. With these qualifications one has the proper energy to work, in other words, the individual enjoys life. Besides this, the normal standards of anatomy and physiology will

be of value in determining any deviation from the normal, and a thorough blood and physical examination will show the resistance of the body to disease.

The commonest factors in undermining the health are chronic diseases and chronic focal infection, particularly infection with pyogenic organisms. These reduce the vitality and resistance to acute or intercurrent diseases. Of course it is recognized that immoderate or excessive use of stimulants, such as alcohol, and overeating and overwork contribute a great deal in lowering the vitality and resistance of the body.

Body resistance may be measured amperically by the standard of 100. Focal infection may also be amperically measured as to its ability to reduce body resistance. There is perhaps no one who may boast of a condition of body resistance of 100, and indeed this may not be necessary in order to possess perfect health. If, however, the resistance goes below, say, one-half, there will undoubtedly be manifested symptoms of disease.

IMMUNITY

According to Vaughan, immunity to any infection is due to the inability of the infecting agent to grow in the animal body. Immunity may be normal or acquired.

This immunity is not common, in fact it is absent, in the cases of most chronic focal infection, and only the best of attention to all the functions of the body, the use of bacterins or vaccines and other dietetic medical and hygienic measures may prevent acute outbreaks. It is plain, therefore, that chronic focal infections must be completely eradicated in order to obtain a cure, or to prevent the occurrence of acute or intercurrent disease. Some focal points of infection are spoken of by Billings as embolic and these, he says, cannot be reached very well by vaccines. In some locations where these embolic processes are located I believe that in addition to vaccines one may employ Bier's hyperemia; this would have a tendency to bring more blood to the parts, such blood being loaded with the introduced vaccines.

ORGANISMS

The various organisms that are most frequently concerned in the causation of chronic focal infection are mixtures of the following: The staphylococci and streptococci of various forms, pneumococcus, *Bacillus coli communis* and *B. tuberculosis*.

Syphilis, sarcoma, carcinoma and other diseases manifest at times symptoms of chronic focal infection; in such case, secondary infections of bacterial type are present.

These organisms may with a few exceptions be located in any one of the above-mentioned locations and in several at the same time. There may be a variety of organisms in the different locations and a mixture in any one of them; for example, there may be a chronic focal infection of staphylococcus and streptococcus in the tonsils, a pneumococcus infection in the gall-bladder and a *B. coli* infection in the appendix.

The toxins, however, as was shown by Vaughan, are of the same deleterious action, no matter from what organism they emanate; he calls them the protein poisons. The study of the protein poisons, toxins and anaphylatoxin are essential in the management of chronic focal infection but can not be discussed in this paper. The recent experiments by Dick and Bur-

* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

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meister on the injection of triturated tonsillar tissue into animals are very interesting and may prove of marked practical value.

GENERAL DIAGNOSIS

As mentioned before, a patient with a chronic focal infection may manifest no other symptoms than a general inability to do good work, expressed as "not feeling well," such an individual is subject to frequent acute attacks of rhinitis, pharyngitis, laryngitis, tracheitis, bronchitis, and tonsillitis with all the possible local as well as general complications. The accessory sinuses, middle ear and mastoid, the lungs, gastrointestinal tract, lymph-glands and blood with the typical rheumatic affections are some of the commoner sequels well known to every one.

LOCAL DIAGNOSIS

The finding of the focal point by the presence of the pus, be it ever so minute in amount, is most important. *The Mouth.*—The teeth should be examined by a competent dentist and death of the pulp, apical infections, carious cavities of teeth with alveolar necrosis and fistulas are among the commonest forms of disease, and pyorrhea alveolaris is looked on as a specific cause of focal infection. It is imperative to employ the Roentgen ray in diagnosis of some of the hidden conditions of the alveolar process. A markedly coated tongue and a diffused chronic stomatitis are not infrequently found with markedly diseased teeth in persons with no knowledge of oral hygiene. In these cases, one will frequently find a chronic infection of the salivary glands with markedly altered salivary secretion. Forcing some saliva out of Steno's duct will demonstrate many pus microbes.

The Nose.—Every one is familiar with the method of detection of pus from the sinuses by nasal examination, and suction, and roentgenograms are important additional diagnostic measures.

The Throat.—The nasopharynx in which the adenoids are located and which are subject to retentions of purulent secretions within their folds and pockets can be examined by the Hayes pharyngoscope, Gargai's direct method by the Brunnunges handle and spatula, Holmes' nasopharyngoscope, and postnasal mirrors, but I have been employing a direct method of exposing the postnasal space by means of a rubber catheter. Focal infections in the tonsils can very easily be diagnosed by pressure against the anterior pillar of the fauces, when either liquid pus or caseous masses will be expressed. Tenderness and redness are additional factors. The size of the tonsil has nothing particularly to do with the amount of infection that may be within it, and a small tonsil may be more injurious to the individual than a large one.

Of chronic focal infection of the larynx tuberculosis, secondary manifestations of syphilis and malignant growths may be mentioned, but these are not very *a propos* to the subject. There is, however, a form of chronic focal infection of the larynx, trachea and bronchi known as the chronic purulent tracheo-bronchitis of the aged, which produces a condition of chronic focal infection. Often such conditions of the larynx, trachea and bronchi are secondary to sinus infection, or foreign bodies of the bronchi.

The Ear.—There may be so little evidence of pus in a chronic suppuration of the ear as to be barely demonstrable, and yet the entire mastoid may be infected, causing chronic intoxication. The roentgenogram and suction will aid in the diagnosis.

The general physical examination with the aid of all the possible laboratory findings will conclude the diagnosis. One particular diagnostic feature I would like to mention is the opsonic index according to Wright; this has been very much neglected in the management of these conditions. Yet if one wishes to know the absolute resistance of the patient to a particular micro-organism that has been isolated from one of the focal points of infection, it will be found indispensable.

TREATMENT

Aside from the eradication of the focal point of infection one should employ aids that will increase body resistance.

Formula as to the degree of chronic focal infection:

From tonsils	20 per cent.
From gastro-intestinal tract.....	10 per cent.
From appendix.....	10 per cent.
From gall-bladder and several other recesses	10 per cent.
Total degree of infection.....	50 per cent.
Resistance	50 per cent.

Removal of the chronic tonsillar infection by complete tonsillectomy will leave only about 30 per cent. of chronic focal infection which, with the addition of autogenous vaccination and other medicinal hygienic and dietetic measures, will be rapidly eliminated by the increase of antibodies, and so establish nearly normal health and resistance.

I now come to the question: Why are the tonsils and adenoids most frequently mentioned as the source of chronic focal infection and why should they in preference to any other chronic focal infected point be attacked, unless that other focal point is more manifestly possible the cause of the general condition? It has been definitely proved by Weichselbaum, Groeber, Wood and many others that the tonsils and adenoid tissue in the Waldeyer ring has the greatest power of retaining infectious material and that the lymphatic distribution to and from these structures is very great. It has been further noted by every laryngologist, as well as by many general practitioners who have had considerable experience with removal of tonsils and adenoids, that marked gain in weight and general well-being, with disappearance of the local instances, follows such a procedure. In many instances of focal infections other than the tonsils and adenoids, as for example, chronic suppurative otitis media or chronic purulent sinusitis, the latter condition cleared up or markedly improved following removal of the tonsils and adenoids. Of course it must be borne in mind that if such pathologic conditions as necrosis of the bones and cholesteatoma are present that the removal of tonsils and adenoids will not effect a cure.

Not alone will a suppurative ear or nose condition often be cured by the removal of tonsils and adenoids, because that may be due to the removal of pathologic structures which would have extended by continuity, but a suppuration quite distant from the tonsils as, for instance in the bladder or uterus, will be markedly improved or cured. The essential point I wish to make in this paper is that by removing a definite focal point of chronic infection (tonsils) the resistance and healing power of the patient is given opportunity to recuperate, and the individual thus is enabled to destroy other focal points of chronic infection, and put the system in a condition to ward off acute

attacks. I called attention to this fact before this Section four years ago¹ in the following words:

I should like to present a theory as to the raising of the opsonic index of the blood to all infections when the tonsils are enucleated. If, for instance, there exists some pathologic condition of the body, near to or distant from the tonsils, which refuses to yield to the treatment applied to the said condition, if there exists merely a lack of healing power, due, most probably, to the constant absorption of toxic matter from the diseased tonsils, and if this toxic absorption is done away with by the complete enucleation of the tonsils and the pathologic condition heals, is it not reasonable to assume that the drain on the system has thus been stopped and the blood given a chance to become powerful enough to cure the disease in question because of the enucleation of the tonsil? For example, operation is performed several times for osteoperiostitis of the zygoma, but the tissues refuse to heal in spite of all treatment, medical as well as surgical. The tonsils, which are diseased, are enucleated and the disease of the zygoma promptly heals, while every other evidence of marked improvement in the general health is presented. We all recognize the increase in weight and improvement in general health, especially in children, after removal of the tonsils and adenoids.

This theory, moreover, applies not only to the tonsil but to other structures as well; for instance, a man has tuberculosis of the kidney, with an external fistula and a hip-joint tuberculosis; if the latter is arrested the patient gains in weight and strength and the fistula and tuberculous kidney promptly heal.

Such results as these are more than mere coincidences and, to my mind, can best be explained by this theory.

That is one reason why the chronic infected tonsils and adenoids should be removed. The second reason why they should be removed in preference to any other structure is because with properly carried out technic there is less danger and inconvenience to the patient, without losing or interfering with some functioning structure. In addition to removing the structures containing the focal point of infection, or evacuating the infected material, we also obtain the predominating organism or organisms in culture and make therefrom an autogenous vaccine or bacterin. Just as soon as the patient has completely recovered from the operation we employ this vaccine in the full dose and continue to do so for an indefinite but prolonged period. This is done to insure complete neutralization of the toxins or elimination of all the trouble.

CONCLUSION

In conclusion I wish to say that all those who believe that chronic focal infection is a hobby would do well to adopt it, rather than remain on the outside making unjust and severe criticism without really giving the subject a fair trial. I well remember a discussion at the Chicago session, in which I strongly advocated the complete enucleation of the tonsil on account of the possible cardiac complication from rheumatism, and one of the speakers stated that he saw no reason why all the tonsil must be removed because, ~~and~~ ^{with} it, it was not cancerous. This same member ~~and~~ ^{rem} one of the warmest advocates of the ~~cor~~ ^{forms} of dis- of the tonsil, and an enthusiast on ~~not~~ ^{not} readily develop focal infection. further characterized ^{I am sure that I have done} by the removal of tonsils and ^{qualifications one has the} and I am sure that I have ^{other words, the individual} the normal standards of ana

* Read before the Section on Laryngology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.
 29, 1910, p. 1523.

THE FAUCIAL TONSILS AS A GATEWAY TO GENERAL INFECTIONS*

NORTON L. WILSON, M.D.

ELIZABETH, N. J.

Attention is directed to this important subject, not because physicians are not familiar with it, but because they do not emphasize sufficiently the seriousness of tonsillar infections. It may seem like presumption on my part to present to this Section a paper on this subject on which so much has been written. If, however, we can prevent some child from going through a short life with a damaged heart or kidney or can curtail the many swollen joints and the intense pain which accompanies them, we have in a measure fulfilled our mission on earth.

There are many good general practitioners and, I may add, a few laryngologists, who have not yet realized that cases of so-called acute articular rheumatism, acute nephritis, acute endocarditis, pneumonia, appendicitis, orchitis and many other acute infections may be the result of acute cryptogenic infection of the tonsils. I do not wish, however, to convey the idea that the tonsils are the only source of infections. I have seen acute articular rheumatism and acute nephritis follow acute otitis media, and it is an established fact that typhoid fever enters through the lymphatics of the intestines, and severe toxemia may follow acute inflammation of the lymphatics of the pharynx and epipharynx.

In my opinion, however, the faucial tonsils are the most frequent sources of infection. There is abundant evidence in the literature to show that many general infections take place through the tonsils, pharynx and nasopharynx with its adenoid tissue, the peritonsillar tissue, the lymph-nodes and lymphatic tissue of the retropharynx, the lingual tonsils, the middle ear, the teeth, gums and urethra. The ring of Waldeyer is the most vulnerable part of the body and the faucial tonsils the most frequent seat of inflammatory attacks. In 1885 I read a paper before our county medical society calling attention to the close relationship between tonsillitis and rheumatism, but just what that relationship was was not definitely established at that time. It is now known that the streptococcus or other germs can enter the blood through the medium of the tonsils and attack the joints or heart or kidneys. The specialist is not active enough in spreading this belief, and when I say specialist I include the pediatricist, because he probably sees more of these cases than the laryngologist.

In 1910 Loeb¹ cited four cases, and said: "Acute nephritis results from acute tonsillitis far oftener than is generally believed."

In 1912 our former chairman, Dr. George E. Shambaugh,² said: "As regards the appearance of the faucial tonsil which is a focus for systemic infection, it is quite clear that the size of the tonsil is no index of the menace this structure may be to the individual."

With this statement I think we are all in accord.

In 1907, Dr. Philip K. Brown³ gave a very wide range of diseases which may gain entrance into the

* Read before the Section on Laryngology, Otolaryngology and Rhinology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Loeb, W. H.: Acute Nephritis Following Acute Tonsillitis, read before the American Laryngological, Rhinological and Otolaryngological Society, 1910.

2. Shambaugh, G. E.: Paper read before the American Laryngological Association, 1912.

3. Brown, P. K.: Remote Effects of Tonsillar Infection, THE JOURNAL A. M. A., June 15, 1907, p. 2024.

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body through the tonsils; he mentioned pericarditis, myocarditis, endocarditis, arthritis, chorea, neuritis, pleurisy, tuberculosis, iritis, phlebitis, osteomyelitis, Hodgkin's disease and possibly certain forms of leukemia.

Dick and Burmeister,⁴ speak of the toxicity of the human tonsils. They are of the opinion that such conditions as asthma, convulsions and even true epilepsy may be produced through the agency of the tonsils. W. P. S. Branson,⁵ gives us the result of an examination of a patient with Sydenham's chorea. His belief is that Sydenham's chorea and rheumatic fever are due to one and the same infecting agent, and he has shown that the commonest avenue of rheumatic infection is the tonsil and next to it the nose.

D. J. Davis,⁶ reported the result of his observations in all of these cases of chronic streptococcus arthritis; F. Theisen,⁷ reports six cases of acute thyroiditis following tonsillitis. Dr. Ben Witt Key,⁸ speaks of absorption from tonsillar infection as a causative agent in phlyctenular conjunctivitis.

There have come under my care eight cases of infection which in my opinion had their origin in the tonsils.

CASE 1.—Nephritis. A young man, aged 18, had acute lacunar tonsillitis, ten years ago. Urine was normal. Three weeks after I first saw him it was noticed that his face and hands were edematous. Examination of the urine showed he had acute nephritis. The nephritis followed so closely on the tonsillitis it made me wonder if I had not been mistaken about the tonsillitis and had really had scarlet fever to deal with. There was no desquamation and no other cases of scarlatina in the house and I was forced to conclude that the nephritis was due to tonsillitis. He made a good recovery in five weeks.

CASE 2.—Rheumatism. A woman, aged about 30, consulted me for a sore throat. The follicles of the pharynx were found to be enlarged and red with the crypts of a moderate sized tonsil inflamed and filled with cheesy debris. She complained not only of sore throat, but of pains in the chest. A careful examination by most competent physicians showed the chest pains to be muscular. They were in my opinion due to infection from the tonsils. The removal of the tonsils was advised but the patient would not consent to operation. The crypts were cleaned out and painted. She consulted me several times each year for the same trouble. The method adopted gave her temporary relief as did sodium salicylate or aspirin. In 1908 she submitted to enucleation of the tonsils. From that time until the present she has not suffered from sore throat nor have her chest pains returned.

CASE 3.—Nephritis. In June, 1910, I was called by Dr. Grier to see a case of quinsy in a young man aged 22. The abscess was opened. The urine was examined and found to be normal. One week following, his eyelids were puffy and examination of the urine showed acute nephritis. She had casts and blood-cells. He made a good recovery in a month.

CASE 4.—Nephritis. In 1912 a young woman of 18 was treated by her family physician for acute tonsillitis. She had had several attacks of tonsillitis and wanted the tonsils removed. About ten days after the attack of tonsillitis, I arranged to remove the tonsils. When I arrived at the hospital I was told the urine was normal. She was etherized and one tonsil enucleated, when the house physician rushed into the operating-room and informed me there had been a mistake, the urine from this patient showed considerable albumin, casts and some blood-cells. The other tonsil was removed.

4. Dick and Burmeister: Jour. Inf. Dis., September, 1913.
5. Branson, W. P. S.: Brit. Med. Jour., Nov. 23, 1912.
6. Davis, D. J.: Chronic Streptococcus Arthritis, THE JOURNAL A. M. A., Sept. 6, 1913, p. 724.
7. Theisen, F.: Albany Med. Ann., 1913, xxxiv.
8. Key, B. W.: Ophth. Rec., June, 1914, p. 273.

removed, she was put to bed in the hospital and kept on milk diet for two weeks; in five weeks all evidence of nephritis had disappeared, notwithstanding the fact that she had been thoroughly etherized.

CASE 5.—Rheumatism. A physician, aged 51, was attacked with a lacunar tonsillitis. Temperature did not go beyond 101; in fact, he kept about the office much of the time. In five days his right big toe-joint became red, swollen and painful and two physicians who saw him pronounced it gout. The urine was negative throughout the entire attack. After a week the toe-joint became normal. Three days after the attack the throat remained somewhat sore throughout the attack. The joint affection was then diagnosed by four physicians as a streptococcus infection from the tonsils. The tonsillar crypts were curetted and painted with a solution of iodine and phenol (carbolic acid). The ankle-joint became normal in a week's time. One week later the tonsils were enucleated, and a long chain streptococcus recovered from the crypts of the tonsils, notwithstanding the curetting and painting with iodine and phenol solution. In order to control hemorrhage he was given 40 grains of calcium lactate on Friday morning, making a total of 105 grains. The tonsils were enucleated under local anesthesia Friday afternoon, and there was very little hemorrhage. His blood-clotting time before taking the calcium was seven minutes; Friday morning after he had taken 105 grains it was two minutes.

Just a word regarding the administration of calcium salts. We have proved conclusively by the aid of the Biffi-Brooks coagulometer that the normal blood-clotting time with this instrument is seven minutes in the adult. We have reduced the blood-clotting time to one minute after the administration of 120 grains of calcium lactate. It must be given in from 10 to 15-grain doses three times a day for three days before operation to decrease the blood-clotting time.

If a general anesthetic is given there may be just as much bleeding at the time of the operation as there would be without administration of the calcium. The bleeding is much easier to control, and once controlled is not apt to recur. Slight pressure will plug up the end of the vessel and in this way the hemorrhage may be controlled. Case 5 has almost its counterpart in that of another physician, but he still has his tonsils and it will be interesting to see which of the two doctors will enjoy the better health.

CASE 6.—Keratitis. Mr. B., student, Jan. 23, 1914, had a sharp attack of tonsillitis. The crypts contained the usual inflammatory exudate, but unfortunately no bacteriologic examination was made. One week later his right eye became sore and it was found he had a severe attack of central interstitial keratitis. He denied lues and a Wassermann examination was negative. I desire to call attention to this case as I have seen no similar report.

CASE 7.—Rheumatism. K. M., aged 18. Twelve years ago I removed this patient's tonsils after the manner of the operation at that time, which was not enucleation. He never had another attack of tonsillitis until this winter, when he had a severe one, which was soon followed by an affection in his right knee and right thumb. He never had rheumatism before. I enucleated the tonsillar stumps last April.

CASE 8.—Rheumatism. H. C. C., male, aged 18, has had several attacks of tonsillitis but never had rheumatism until last August, when one week after an attack of tonsillitis his ankle-joints became swollen and painful. He was taken to Mount Clemens for treatment. Last October a pair of buried tonsils were enucleated, since which time he has had neither tonsillitis nor rheumatism.

My associate, Dr. Keefe, reports to me four interesting cases of a similar nature, one of which was in

a child 6 years old, who had double mastoiditis and pleurisy following an attack of tonsillitis.

Through the courtesy of my associate, Dr. Schlichter, I am able to report the following case:

Miss K. K., aged 25, a domestic, had an attack of lacunar tonsillitis, followed in one week by acute nephritis. She was sent to the hospital, March 7, at which time she had no heart lesion. The kidney lesion had almost subsided when, March 19, about eighteen days after she was first attacked with tonsillitis, she was stricken with acute septic endocarditis and died the next day.

We have abundant clinical evidence of infection from the tonsils, and it may be profitable to spend a few minutes reviewing the laboratory evidence.

Dr. MacLachlan of the University of Pittsburgh, in a histopathologic study of 350 pairs of tonsils, makes the following statement:

We have observed that when symptoms of acute tonsillitis are present there is always a pathologic basis as shown by ulceration of the lining of the crypt. We therefore feel that a similar lesion is present in the tonsillitis preceding rheumatism and as far as we know, this lesion differs in no way from that of acute lacunar tonsillitis. We regard the ulceration of the lining of the crypts as being the vulnerable point of entry of organisms from the mouth. It matters little apparently what bacteria have produced the lesion, for once the ulcer has formed, it is possible for any type of organism to gain access to the deeper tissues.

Such is the probable origin of acute rheumatic fever following tonsillitis. The tonsillitis is not rheumatic but pyogenic in origin and the development of rheumatism is in all probability due to an overwhelming invasion of the rheumatic infection the nature of which is not definitely known.

At the meeting of the Eastern section of the Triological Society held in New York during January, 1914, Dr. George B. Wood of Philadelphia demonstrated on the screen the presence of bacteria in the tonsil of the hog which had penetrated the cryptal epithelium into the interfollicular tissue.

The late Dr. LeFevre in discussing the paper was thoroughly in accord with the view that rheumatism is an infection which gains entrance into the body through the tonsil.

Dr. Wood in his article on tonsillar infection in the hog says:

The anthrax bacillus penetrates through the cryptal and not the surface epithelium. It probably always gains access to the parenchyma of the tonsil by passing through the living unaltered cryptal epithelium, and having gained access to the superficial layers of this epithelium, it tends to multiply in the deeper layers and thus pass into the interfollicular tissue.

The rapidity of the invasion is influenced both by the virulence of the organisms and by the susceptibility of the individual animal. In some of the sections examined the bacilli were found penetrating the blood-vessel walls and a few were seen in the blood-current.

From the laboratory and clinical studies we are forced to conclude that infection does take place through the tonsils.

410 Westminster Avenue.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. BECK AND WILSON

DR. GEORGE E. SHAMBAUGH, Chicago: One of the most important contributions to medicine during the past decade has been the elucidation of this relation between focal infection and serious systemic diseases. The most important focus in the causation of chronic systemic infection, appears to be the faucial tonsils, which cause, as Dr. Beck has stated, more

trouble than all the other foci together. The reason is not difficult to find. The faucial tonsils are more frequently the seat of severe, acute infection than is any other organ in the body. It is rare to find an adult who has not experienced one or more attacks of acute follicular tonsillitis. The tonsils with their deep pockets are admirably suited to retain latent foci of infection capable of causing the most serious systemic trouble. The etiologic relation between an attack of acute tonsillitis and one of rheumatism, nephritis or neuritis which immediately follows the acute infection, is easily recognized. Not all the cases in which this relation of cause and effect exist are so readily recognized. A patient recovers from the acute tonsillitis with latent unsuspected foci remaining in the tonsils, and only after the lapse of some months or even years, does the evidence of systemic infection appear. It is in the recognition of these chronic cases that the chief difficulty presents itself. In such cases an examination of the tonsils will often disclose such positive evidence of foci of infection as pockets of pus. In other cases no pus can be expressed from the tonsils but their congested edematous appearance indicates distinctly that they are the seat of inflammatory reaction. At other times the history of recurring attacks of tonsillitis in previous years leads one to suspect the tonsils as the possible focus for the systemic infection. Not infrequently no distinct evidence of infection in the faucial tonsils can be demonstrated, nor will the patient recall ever having had an attack of tonsillitis, and yet when the tonsils are removed abscesses of varying size will be disclosed in them. It is evident to all that in the proper handling of these cases of systemic focal infection it is of great importance that our work should cooperate with that of the internist, the dentist, etc. The specialist working in isolation is likely to overlook the tonsil as the possible cause of the trouble because he fails to detect palpable evidence of infection in it, or he may remove tonsils when other foci, which the internist would readily detect, are really causing the systemic trouble.

DR. ROBERT LEVY, Denver: Year after year the importance of the tonsils in relation to general infections is repeated in this Section. We ought to emphasize the importance of these facts to our friends in other branches of medicine. It is true some of our internists and pediatricists are awakening to the importance of this subject, but it is often astonishing how many there are who do not as yet realize it. The previous history of every case in which the patient is suffering from recurring attacks of tonsillitis is worthy of much consideration. Dr. Shambaugh states that previous attacks of tonsillitis pass out of the memory of the patients. Perhaps we must go back to the first attack in early childhood. In many cases the most careful investigation fails to reveal any previous attack of this affection, but on careful investigation we find that during childhood attacks of sore throat occurred which had been forgotten. In childhood we often find a history of attacks of indisposition with more or less fever and nondescript symptoms which were attributed to disordered stomach. No local affection of the throat was recognized. Very frequently one can determine that these attacks were really due to tonsillar infection and in our subsequent management of the case should be so considered.

DR. GEORGE L. RICHARDS, Fall River, Mass.: I agree with what Drs. Beck and Wilson have said concerning the danger of focal infection, but one point they have not referred to. Nearly every city now has school inspectors who examine the throats of children and, as a result of these examinations, we have a great many children brought to us, especially in the clinics, with the statement that "this child has enlarged tonsils," or "he has adenoids." All the history they bring is that the inspector has said that they have enlarged tonsils or adenoids. The child complains of nothing, but the inspector says he has enlarged tonsils. Now, shall we take out all these tonsils or shall we wait for definite symptoms? We are still about as much in the dark with regard to the physiology of the tonsil as we ever were. If we say that these patients don't need to be operated on, we find later that some other doctor has done the operation. I call attention to the

fact, based on a chance to observe a great many children whose tonsils have not been taken out but from whom the adenoids have been removed, that these children are frequently brought back for a tonsil operation. Often after tonsils are removed there is a reproduction of granulation or follicular tissue along the posterior pillar and sometimes between the pillars, as though nature endeavored to protect herself in some way with this new tissue.

DR. OTTO T. FREER, Chicago: The list of diseases serving as an excuse for tonsillectomy has been growing at an astonishing rate and such ailments as muscular rheumatism, neuritis, palpitation, goiter, chronic Bright's disease, laryngitis, nervous cough and vasomotor rhinitis have been included as unquestioned proof of some supposed but not evident focus in the tonsils. In fact the path of sound pathologic research has been left for vague speculation, based, as such speculation usually is, on some truth. The view that chronic tonsillar focal infection is frequent is not in accord with common clinical experience which, while it long ago recognized the tonsils as a source of such acute systemic infections as articular rheumatism, nephritis, endocarditis, pyemia, etc., is supposed in the long ages to have overlooked what the investigators have claimed to be so obvious, chronic focal infection. This overlooking, concerning what is asserted to be a sequence of great frequency, seems incredible considering how carefully etiology has always been studied, and the sequence, that many grave and obstinate diseases depend on a mysterious tonsillar focus which does not even locally indicate its presence, is not in harmony with the daily experience of laryngologists to whom most of the diseased tonsils with obvious foci come, not as causes of systemic disease, but on account of the local inflammations caused by them, for the patients bearing these tonsils are not rheumatic nor do they seem to be afflicted with more chronic ailments than other people. On the focal-infection theory we should, at least, have many rheumatic cripples coming to us, while the fact is that in the intervals between attacks of tonsillitis or peritonsillitis our tonsil patients are quite well. Many apparently normal tonsils, in patients with chronic ailments, are removed as sources of infection without improvement of the patient's condition and should have been left untouched.

DR. W. W. CARTER, New York: I treated a little girl four years ago who had an acute tonsillitis and on examination I found that she had chronic endocarditis. Two days later she had an acute attack of endocarditis and I ascertained on getting a fuller history of the case, that she had had three or four attacks of tonsillitis. When she had recovered from this attack I tried to get permission to remove her tonsils but the parents objected on the ground that she had heart trouble. I saw that child in three subsequent attacks of tonsillitis and in from twenty-four to forty-eight hours after the beginning of each attack she had an acute endocarditis. About two years after I first saw her she died. As has been said, the size of the tonsil has nothing to do with the question. The dangerous tonsil is the submerged one and the one that has had several previous infections. Pathologic changes have occurred in the crypts, drainage is interfered with, and then we get absorption. We must conclude from our clinical experience that the tonsil is the real source of most of our focal infections and that, therefore, we must remove the tonsil. At present that is the only solution of the problem, unless there is some other obvious source of the infection. I wish to emphasize the fact that we seldom have focal infection following the first attack of tonsillitis. It is only after several attacks when these pathologic changes have occurred in the crypts that we get the general infections.

DR. JOHN F. BARNHILL, Indianapolis: The whole question is one of diagnosis, and physicians who practice laryngology ought to be as careful here in the matter of accurate diagnosis as in other branches of medicine. That it is wrong to remove the tonsils in every case is not questioned. Dr. Beck's paper brought out much that ought to be included in every history sheet. It is wrong, in a large majority of cases, to remove tonsils until one has gone into all the points concerning focal infection. Our history sheets should ask questions

concerning rheumatism, nephritis, arthritis, heart-disease, etc.; and may show that the general infection has been entirely due to some other cause than the tonsils. There can be no question, however, concerning the correctness of Dr. Wilson's contentions. There are such cases as he speaks of and we should be more active in removing such tonsils. We should be better teachers in what concerns the public welfare. It has been alleged here that the general practitioner has been slow in appreciating these things. My own experience is that they have often been quicker than we have. The first cases I ever saw and had clearly brought to my attention, of focal infection due to the tonsils, were brought to my notice by a general practitioner. A certain professor had been so ill with heart-disease for a long time that he could not carry on his work. He came into the hands of Dr. Osler who went over him again and again and finally said, "Your tonsils are the cause of all your trouble." He advised that the patient be operated on thoroughly but the tonsils were only clipped. The illness continued over a period of two years. Osler had gone abroad and the patient came into the hands of Dr. Janeway, who after careful examination told him the same thing. Then the patient's tonsils were completely enucleated and ever since, or until his death from pneumonia some time ago, this patient remained well. Another instance was that of a child, very ill with endocarditis, following an acute tonsillitis. The family physician requested me to examine the tonsils. I did not see much there but on the insistence of the physician, the tonsils were removed, and to my surprise, in one of them a deep abscess existed containing a teaspoonful of fluid pus, which evidently had been there since the acute attack of tonsillitis two years previously.

DR. DENNIS J. McDONALD, New York: The important thing is, as Dr. Barnhill said, the question of diagnosis. We should know what tonsils to remove. As to the question of school inspectors, considered from an economic point of view, it is well worth the tax payer's money to have these matters taken up in a proper systematic way, and the important thing is to have proper inspection and to know what cases are to be operated on. This Section ought to draw up a memorial advising that all cities of 50,000 or over should have one or more specialists make a proper survey of the situation. In larger cities the committee should consist of four physicians; two nose and throat specialists, one pediatricist and one orthopedist. In this way we could arrive at some proper working knowledge.

DR. THOMAS E. CARMODY, Denver: Dr. Wilson gives credit to calcium lactate when, possibly, it should not be credited. I have taken the coagulation time in a number of cases and for some reason or other was unable to operate at the time planned, and a few days later found coagulation time to be from one to two minutes longer or shorter. The normal time of coagulation with the Boggs instrument, which I use, is four minutes, but there may be variations in the same person. With regard to focal infection it begins in the tonsils often because the tonsillar crypts cannot empty themselves on account of lack of muscular fiber in the tonsils, or hypertrophy of muscular tissue in the pillars covering the tonsils. We have examined about one hundred tonsils and found various conditions. We find in a number a lack of epithelium and infection can so gain access. The probabilities are that we never get infection through the intact epithelium. Another reason why the crypts become filled with secretion is because of loss of this epithelium. The secretions cling to the surface devoid of epithelium in the crypts, like scabs on the surface of the body, or on the walls of the nasal cavity. It was stated that these children do not complain of throat symptoms. I have seen a number of cases in which, on examination, the patients were found to have tonsillitis although nothing could be learned on questioning the child.

DR. STANTON A. FRIEDBERG, Chicago: I have been associated with Dr. Shambaugh in a good deal of the same kind of work he mentioned and can endorse what he said with regard to focal infections. One criticism has been offered concerning the results of treatment. In the chronic arthritic cases I think it is sufficient if we are able to limit the process

of the infection. We cannot expect a loosening up of the joints to a normal state. In these patients, some of them 60 years or more of age, if we can limit the progress of the disease we have accomplished a great deal. One point that has not been brought out is the possibility that the ear may be the seat of focal infection. Dr. Borden, a year ago, presented this theory. At a meeting of the Laryngological, Otological and Rhinological Society he cited a number of cases of nephritis in conjunction with otitis media, in which after the mastoid operation had been performed, there was a rapid clearing up of the nephritic condition. I have had the same experience.

DR. EMIL MAYER, New York: One condition that we frequently encounter in our patients and that has not been mentioned here, perhaps because we have been speaking of more serious complications, endocarditis, nephritis and things of that sort, is that patients will come with a complaint, that for want of a better name they call a rheumatic condition of the throat—a feeling of fulness and soreness. In these cases I have been able to express, by means of compressed air, some decayed material from the crypts which has caused this trouble. It is not a bad suggestion to treat some of these cases in that way. While I have not seen Dr. Wilson's bibliography, I called attention to these focal infections a considerable while ago. We have all spoken of the good results from our tonsillectomies, but what about the bad results, about the cicatricial conditions after bad operations? If we want to teach the general practitioner to appreciate our work, we must be sure that our work is good. If not, you will see what I have seen, cicatricial tissue in the postpharyngeal wall, an appearance as though there has been a syphilitic process.

DR. W. E. DIXON, Oklahoma City: History tells us that Celsus in the year 10 A.D. advocated the removal of tonsils. Celsus didn't say why, but he used the same method that Dr. Richards employs, removing them with the finger, and he did not stop there, but adopted Ballinger's method, with the scalpel. As to the matter of making a diagnosis of tonsillar infection, do we know that the removal of diseased tonsils is going to stop the rheumatism when we know that there are other sources of infection, as the accessory nasal sinuses? If these are not looked after, we may still have a continuance of the infection after removal of the tonsils.

DR. A. I. WEIL, New Orleans: The matter of further education of the profession and of the laity is one which is well worth considering. Patients have come to us not through their own physicians, but independently, and the poorer classes come in the clinics. Even the negroes will say "This child has tonsils and adenoids," and if you refuse to operate they are disappointed and go elsewhere. They have learned that these things are the cause of innumerable troubles. Many of these tonsils are normal and require no interference, but it is difficult to tell always which tonsil is causing infection. That is well illustrated by a case in my own family; a child of 4 or 5 years who had been subject to such indispositions, as have been referred to by Dr. Levy—periodic attacks of fever and mild illness, the tonsils apparently perfectly normal; no previous attacks of tonsillitis; some enlarged glands in the neck. I got the reluctant consent of the parents to remove the tonsils and after they were removed these periodic attacks of mild illness disappeared. The child has taken on weight and is apparently much improved, although the tonsils were apparently normal. I had my attention called to the toxicity of these infections some years ago when doing work on tuberculosis of the tonsils. In the course of my work it was my practice to inject titrates of tonsils into guinea-pigs and it was surprising how promptly they died from general infection. These tonsils were loaded with organisms of all kinds.

DR. E. B. GLEASON, Philadelphia: In connection with Dr. Wilson's paper, it would be interesting to inquire what are the more common sources of infection of the tonsils themselves? When we remember how frequently alveolar abscesses occur, our attention is directed to them as a source of tonsil infection. A case in point will show how important

this matter is; a gentleman between 50 and 60 years of age, with perfectly normal tonsils, for some years had recurrent tenderness of the right first and second molars of his lower jaw. The last attack commenced with tenderness in these teeth, then the tonsil on the same side became infected; he had a temperature of 102 or 103 F.; the other tonsil became infected and later a purulent rhinitis started up. Culture of the secretions from the nose showed a nearly pure culture of *Streptococcus brevis*. The extraction of the teeth brought about an abrupt cessation of the attack. The roots of both teeth below the gums were carious and the alveolar abscess swarmed with streptococci. Before attacking the tonsils it would be a good plan, in the majority of cases, carefully to examine the nose, accessory sinuses, and more especially the condition of the jaws, because latent foci of pus in the jaw is much more common than in the tonsils. If patients with acute articular rheumatism in our hospitals are questioned, some curious phenomena will be noted. Very few of them have had previous attacks of tonsillitis. I remember a number of patients that I questioned in this way in the Medico-Chirurgical Hospital and some of them had had recurrent attacks of tonsillitis when they were young, none of which were followed by rheumatism. After these attacks of recurrent peritonsillar abscess ceased to occur and the tonsils became normal, the attacks of acute articular rheumatism occurred, and were evidently from some other source than the tonsils. The tonsils are usually swollen during the time the 6 and 12-year molars are erupting and sometimes during the "cutting" of other teeth.

DR. HUDSON MAKUEN, Philadelphia: No one will deny the theory of focal infection, and few of us will question that the tonsil is one of the sources of systematic infection, but is there not a possible danger in the frequent reiteration of this fact? The tonsil operation, in my opinion, is already too popular. I should not be surprised if some of us have done the operation for the simple reason given by Dr. Richards, namely, that "if we didn't do it some other fellow would." Another thing that makes the operation too popular is the teaching that the removal of the tonsil does no harm. Now the removal of the tonsil may and sometimes does do harm. In a recent paper on the subject, I made the statement that an extracapsular tonsillectomized pharynx is always a damaged pharynx, and I believe this to be a demonstrable fact. I think we ought to insist on a fuller investigation of the conditions before we operate. We should try to be sure in every case whether or not the tonsil happens to be the cause of the infection, and if it is, let us remove it and if it is necessary to do an extracapsular operation, let us do that, but remember that it is possible, in many cases, to remove the source of infection without doing this radical operation.

DR. HAROLD HAYS, New York: It seems to be really a question as to whether or not the tonsil is responsible for every acute infection that the body is heir to. The same thing has been said of the appendix. In the New York Eye and Ear Infirmary in the last five years something like five thousand tonsillectomies have been done. They are removed to prevent infection. Many of these children that are suffering from malnutrition are found to have some focal infection as the cause. I think a great many of these cases in children who do not develop properly are due, not to infection from the tonsils, but to obstruction or chronic irritation of the throat. In many patients we find no evidence of tonsillar trouble. In a few weeks the patient has acute rheumatism. He doesn't return to us and we cannot say whether or not the tonsil is infected, but, in the majority of cases of acute articular rheumatism, I believe we would find that very few of the patients have had acute tonsillitis. Of course there is no doubt that patients with nephritis or rheumatism may have enlarged tonsils. It is important to consider that there are possibly some other sources by which infection may get into the system. A great deal of this work has been done as a result of having cases sent to us for more or less promiscuous reasons. The majority of us are looking for trouble in the throat. A great many tonsils are removed perhaps without doing any harm but also without doing any good.

DR. C. E. COOPER, Denver: In connection with the question of diagnosis and operation, I have found it helpful to ascertain whether or not the tonsil is infected. If a needle is plunged into the deep tonsillar structure and a sufficient number of small punctures are made, enough fluid and blood for examination will exude. A culture made from this will give the bacterial flora of the substance of the tonsil. If it is a streptococcic infection, it is an indication for operation. I have seen several cases of acute and chronic nephritis associated with infected tonsils and consider it an indication rather than a contra-indication for operation.

DR. RUFUS B. SCARLETT, Trenton, N. J.: The trend of the discussion seems to be toward the tonsils as a source of general infection. No doubt at present dentistry is being better done than it was ten or fifteen years ago when decayed teeth, as a rule, were not filled to the roots as they are to-day. Some of these teeth filled in this incomplete way are now causing trouble through the pulps infected at the time of the decay. I speak of this because during the past year I sought information as to the cause of an infection and consulted the best men I could find. Only recently a roentgenogram located an abscess at the root of a tooth. Very often a systemic infection may be attributed to the tonsils by a process of elimination when it may really be due to a pocket of pus at the root of a tooth.

DR. BURT R. SHURLY, Detroit: One point we have as yet not mentioned. Those of us who have practiced internal medicine know how frequently in cardiac disease two or more murmurs may be heard in the heart, and often, as we narrow down and become more and more concentrated in one line, we fail to look further after finding one explanation for a trouble, one particular focus of infection. If we find it in the tonsil we are satisfied and look no further. It would be unfortunate not to emphasize this fact. Internists are not satisfied with diagnosing one cardiac murmur when there may be more, and we should constantly bear in mind that there are frequently two or more locations for our focal infections. If we happen to be the first to investigate the case, we must consider this possibility, and if necessary have the internist aid us in our search.

DR. JOHN J. SULLIVAN, Scranton, Pa.: We are having a dress reform, a religious reform, and a half dozen other reforms all over the country and I suppose now we must have a tonsil reform. It is simply a matter of more accurate diagnosis whether or not the tonsils shall be removed.

DR. JOSEPH C. BECK, Chicago: Concerning Dr. Freer's remarks with regard to exophthalmic goiter as caused by infection from the tonsils, he can find plenty of evidence that this is so; not directly from the tonsils to the thyroid, but due to changes in the glands of internal secretion brought about by toxicity. The tonsil is a frequent cause of that toxicity and hence is the most important structure for us to study in that connection, not that there are not other foci too. By removing a certain percentage of chronic focal infections, we enable nature to take care of and eradicate the other foci.

DR. NORTON L. WILSON, Elizabeth, N. J.: Every time I have tonsils to remove I ask for what reason they are to be removed. I, too, have had cases sent in by the school inspectors but would not remove the tonsils without some specific reason. I took it for granted that every throat surgeon was possessed of a certain amount of common sense and such a man doesn't remove every tonsil he sees any more than an abdominal surgeon would remove every appendix that comes his way. With regard to the remark that the coagulation time is four minutes, I stated that the normal coagulation time with the particular instrument I used was seven minutes. Of course, each variety of instrument has its own clotting time.

Empiricism.—Empiricism assumes the existence of a fact even though it cannot be traced to any known law of wide application. Every general synthesis which is not fully established, must, at least provisionally, be characterized as empirical.—Lugaro, Problems in Psychiatry.

THE PRESENT TEACHING OF PSYCHIATRY IN AMERICAN MEDICAL SCHOOLS*

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LOS ANGELES

In order that Dr. Singer's paper might receive the best possible consideration and discussion in this symposium, it seemed wise that present conditions in the departments of psychiatry of our American medical schools should be presented to you to-day.

To that end I sent out the following questions to seventy of the Class A+, Class A and Class B schools:

1. How many hours are given to the teaching of psychiatry in your school?
2. How many hours would you like to have for it?
3. Does your course correlate psychology with psychiatry in a definite manner?
4. What faults have you noted in present teaching methods?
5. Outline your ideal course in psychiatry.

About forty replies were received. In character they ranged from uninterested, categorical and monosyllabic answers, to four-page letters written at the cost of time and much thought.

On the whole, they showed that the majority of the men teaching this subject are entirely dissatisfied with the situation.

A calculation based on all the answers to Question 1 shows that American medical schools average 33.4 hours of combined clinical and didactic work in psychiatry. Leaving out two schools, one of which gives 140 and the other 69 hours to the subject, I find that the average is but 28.6 hours. This includes not only the psychiatry but also the psychology which is given in a number of institutions.

In examining the answers received to Question 2, "How many hours would you like to have?" the average is found to be 50.3. Again leaving out the two schools having a very high number of allotted hours, the average is found to be 40.7. The desired increase is 33 per cent. in the former calculation and 49 per cent. in the latter. In other words, the consensus of opinion is that American medical schools give from one-third to one-half less time to this subject than is proper and right.

Several Class A+ schools have a course well thought out and balanced. Indiana University leads all other American medical schools in number of hours given to the subject. In analyzing the course in this institution the impression is obtained that it is more a collection of a number of isolated series of lectures and clinics than a well-thought-out whole. The dean intimated to me in his letter that it was rather a haphazard growth than a constructed course.

At the other end of the list of A+ schools is found Western Reserve University, my own alma mater, whose psychiatrist wrote me with immense disgust that the faculty would allow him no definite hours whatever for the teaching of mental diseases, but that he had succeeded in getting twenty-five for this work in spite of the snub of the curriculum committee.

The smallest number of hours given to the subject is at Tulane University, where there are but eight.

* Read before the Section on Nervous and Mental Diseases at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

tion about one year previous. Such repetitions as "Peetreet" for "Peachtree Street" were extremely common. Spontaneous writing outside of the patient's signature was impossible. In copying printed titles of three words, from four to six minutes were employed in this transference. It was almost impossible for the patient to transfer spoken speech to writing. Simple arithmetical sums were performed.

Inability to name objects was present in about 20 per cent. of the tests, and the patient was able to tell their use in a large percentage of the tests, though of course the explanation was paraphasic.

Apraxia was principally of the limb-kinetic variety (Liepmann). The finer and more intricate movements performed by the fingers were impossible. Such motions as buttoning the coat, using table utensils, etc., could not be performed, though the manipulation of a pencil in writing was moderately fair.

The ideokinetic variety evidenced itself in from 20 to 30 per cent. of the trials by such derailments as grasping an object when directed to write.

Consideration of the stereognostic sense was interesting. Simple articles, such as keys and pencils, when placed in the right hand were very frequently unrecognized. Probably 75 per cent. of the tests were failures.

Psychically considered, the patient was still emotional and high strung and there was a great tendency toward the hyperexcitable state of mind when involved in any conversation.

Examination of the ataxic disturbances disclosed correct execution of the simpler tests to be extremely rare. When directed to perform the finger-chin test the error would be sometimes so great that the patient would touch his forehead or ear.

The sense of position disclosed perhaps the greatest disturbances of all. It was utterly impossible for the patient to ascertain the position in which his right arm had been passively placed. It was not at all extraordinary for him to reach in front of him for his right arm and hand when they had been placed back of his head.

Reflexes revealed a slight exaggeration of the knee-jerks, particularly on the right side, but there was no ankle clonus or Babinski reaction. Superficial and organic reflexes were normal.

Examination of the eye revealed no paralyses. Eye grounds were slightly anemic. There was no edema. Perimetric findings were normal.

Examination of the cerebrospinal fluid showed a negative Wassermann.

Consideration of the signs and symptoms in this case led us to believe that the lesion was located on both sides of the fissure of Rolando and likewise involved the angular gyrus. Owing to the character of the perimetric findings a deep-seated location was not judged probable.

I am indebted to Dr. Hansell Crenshaw for the following summation, arrived at from an independent examination:

"We know that the patient in this case suffered from a brain lesion because of his difficulty of speech; and additional support is lent to this opinion by the increased knee-jerks indicating upper neuron involvement, and by the patient's inability to recognize the nature of objects merely through the tactile sense of the hand. Moreover, the twitching of the muscles of the right hand suggested an irritative lesion of the motor hand center, on the left side of the brain; and the dragging foot indicated a corresponding left motor center destruction. Thus it was evident that the motor area of the right hand and foot were involved in the lesion. It was further evident that the angular gyrus situated between the parietal and temporal lobes near the posterior extremity of the fissure of Sylvius was doubly involved, because the perception of written words occurs in this gyrus and because the stereogenous sense—the power to recognize objects by their feel—is also a function of this particular fold of the gray matter. Agraphia, then, or word-blindness, and astereognosis, or inability to know objects through the tactile sense, both being well marked in this case, the angular gyrus was decided on as a probable posterior boundary of involvement, while the motor area of the frontal lobe was taken as the probable anterior limit."

Operation.—This was performed by Dr. Rensen, April 17. At this time an osteoplastic flap was fashioned to include exposure of both motor region and angular gyrus on the left side. This flap was turned out on its hinge, replaced and sutured without opening the dura. The second stage of the operation was performed April 21. The osteoplastic flap was turned out again and the dura opened corresponding to the flap. The findings were as follows: In the center of the dural flap the dura was adherent to the underlying brain. This was easily separated and the cortex viewed. The cortex was yellowish and pale and flecked with bright yellow spots which appeared to be the result of old and small hemorrhages. The spots measured about 0.5 to 1 cm. in diameter and resembled in appearance calcified areas. The cortex as a whole showed various hues of pale yellow, and few blood-vessels were seen except in the anterior part of the exposure. Here were several blood-vessels of normal size and the brain had a normal purplish-gray hue. The posterior portion of the exposure showed the same pale-yellow, anemic appearance and on careful depression under the posterior border of the skull this anemic condition could be seen extending posteriorly for a distance as far as 3 to 5 cm., gradually diffusing into normal-appearing cortical substance. The anterior outlines of the area were more sharply demarcated. The upper and lower boundaries corresponded with the flap. The substance of the cortex bulged out in a thinned shell corresponding to the pale-yellow area (5 by 7 cm.), and palpation suggested fluid. An exploring trochar revealed after penetrating a thin cortical layer about 0.25 cm. thick, clear, pale-yellow fluid under tension shooting up a distance of a foot from the operative field. About ½ ounce was evacuated this way, and the cortex immediately collapsed and wrinkled up over this area. Examination of the puncture hole showed the brain cortex to be jelly-like in consistency, in cross section. Further exploration of the cavity revealed no definite cyst wall and it seemed probable that the condition was either a cystic degeneration from circulatory disturbances or else an old hemorrhage which had caused the formation of a cyst. On account of the possibility of infection, drainage was deemed inadvisable, especially as there was an opening 0.5 cm. in diameter connecting the cavity with the subdural space. This was not tampered with. Unipolar faradism did not reveal response, but this was not persisted in very long. Our landmarks were merely from the external measurements and were, therefore, not as accurate as if we had obtained responses from direct stimulation of the cortex.

Closure was done in the usual manner, the dura with interrupted fine black silk, the fascia with the same, after the osteoplastic flap had been replaced, and the skin with interrupted fine black silk.

Result.—Twenty-four hours after operation the general condition was excellent and the patient seemed very little disturbed from the operative procedure. The examination for motility exhibited no great change twenty-four hours after operation. There was a difficulty in performing the finer movements of the fingers and wrist (mostly apraxic). Flexion of the fingers and abduction of the thumb were especially weakened and limited. Separation of the fingers was as yet impossible. The anterior tibial group was unchanged, and abduction and adduction of the foot as well as extension showed an unchanged weakness. Examinations at intervals for the next eight weeks exhibited an intermittently improving change in the character of the motility of the right hand. (It is interesting to note that the lower phases of this intermittent progress were usually associated with rather marked trophic disturbances, evidencing themselves by a peculiar cyanosis, and a transient, boggy swelling limited to the fingers and palm.) At the end of eight weeks flexion of the hand was such that the patient was able to grasp objects such as a bottle or book, etc. The weakness of the extension of the fingers and wrist had practically disappeared, and adduction and abduction, though still weak, showed a distinct change for the better. At this time, too, the thumb motions had arrived almost at a normal state of activity. The Jacksonian

attacks in the right hand have occurred but twice since operation, and within the first three weeks. Since then there has been a complete disappearance of this symptom of motor irritation. The results with the foot were encouraging. Weakness of the dorsal flexor group disappeared. There is still weakness in the plantar flexor group, so that the dragging of the foot, which may be remembered as a prominent feature, is now only of occasional occurrence. Examination twelve weeks after operation showed a still further improvement in the hand. Flexion of the fingers describes the normal arc, allowing the patient to use his hand with only slight difficulty, and this is perhaps more of an apraxic disturbance than a sensory-motor insufficiency. Strength of the grip is excellent, and the wrist movements as well as extension of the fingers is such that it will be difficult to tell this from the normal condition. In the foot, weakness of the dorsal and plantar flexors is not demonstrable. The dragging of the foot on walking has disappeared completely, while resistance to passive motion does not demonstrate any perceptible weakness in the anterior or peroneal group of muscles.

On examination of sensory disturbances forty-eight hours after operation, information was offered by the patient that his hand felt "more natural," and "not so numb." No subjective symptoms were experienced in the foot. No careful tests were made until two weeks after operation, when it was found that the area involving disturbance of heat and cold perception had diminished somewhat so that the upper limit was located at the wrist. Below this, disturbances to sense perception showed no improvement. At times, it may be noted, this condition was as bad as before operation, but these periods of regression were extremely transient, and soon passed off to be followed by an improvement. It was not until the end of eight weeks that we could notice anything like a permanent improvement in the hand. Disturbances in sense perception of the foot entirely cleared up within the month following operation. In the last four weeks it has been possible to follow with accuracy the diminution in the area, the upper limit of which has gradually descended until disturbances in touch perception, especially in the palm of the hand and over the dorsum of the wrist, still stand as the sole reminder of the past disturbances in this field. Subjectively, there is still occasionally an attack of slight numbness in the hand (sensory epilepsy?) which is, however, very evanescent.

No tests for ataxia were made until eight days after operation. At this time the patient had a rather gross ataxia of the right arm and hand and was utterly unable to perform such movements as touching the tip of the nose with the finger. During the seven weeks following, there have been periods of quite marked improvement punctuated with short spells of regression, but during the last month the periods of regression have been absent. The patient still diverges from 1 to 2 inches in touching the finger to stated points. Probably 75 per cent. of his trials are perfect, while the remaining 25 per cent. show this divergence. During the two months following the operation there seemed to be a slight but definite ataxia of the right foot and leg as evidenced in the patient's gait, which occasionally even suggested tabetic stride. This, complicated by the muscular disturbances, made walking not only burdensome but impossible. Lately this ataxic condition has shown a steady decrease, and at present cannot be demonstrated.

On examination fourteen days after operation, perception of the sense of position began to appear. Here we have seen a fairly steady progress with little or no periods of regression. At the end of the eighth week the patient was able to tell in approximately 80 per cent. of the trials the exact position of the arm when passively placed in various attitudes. At present practically 90 per cent. of the trials are successful.

The stereognostic sense showed at first a slow improvement, and was intermittent in its progress. Nevertheless, on the eighth week the patient showed an ability to recognize objects placed in the right hand with a fair degree of accuracy, about 50 per cent. of the tests being perceived. Four weeks later, about ten objects were tried, such as a key,

watch, pencil, ink bottle, match box and the like, and each object was readily recognized with the exception of one, the recognition of which was delayed for about two minutes.

Evidences of trophic disturbances existed six weeks after operation as seen by cyanosis, glossiness of the skin and a boggy swelling. These were quite marked at the examination two weeks after operation. The fingers were probably half again as big as the fingers of the left hand, while the glossiness and cyanosis were equally as evident. This condition was more or less transient, and appeared several times quite rapidly, possibly in the course of a few hours. Each exacerbation was rather sudden in its appearance, but subsequent diminution usually appeared shortly. Forty-eight hours previous to the last examination the patient had a similar symptom-complex, though the glossiness and cyanosis of the skin was practically absent, and the swelling of the fingers was such that without close observation this symptom might have been entirely missed. (No such disturbances were seen on the foot.) These disturbances went hand in hand with the regression in the sensory disturbances and would frequently mechanically interfere with the motility.

There has been but little disturbance of reflexes. The extremely slight increase which had been noted once in the arm was replaced by a quickly shifting variation in the reflexes on one or the other side, so that at no time was there any permanent distinction. The knee reflex of the right side, however, remained slightly increased. The superficial and organic reflexes have remained unchanged and normal.

The stimulation of the muscles by electricity has been of no special significance. Faradism to the weakened groups showed active response. Galvanism produced normal response.

Contractions and rigidities of the muscles have always been absent.

Apraxic disturbances have been extremely interesting. It will be noted that in the preoperative examination the more intricate movements of the fingers did not exist. Not only was the patient unable to perform such fine movements as buttoning his coat or putting on his collar, but it was also seen that there was frequently a derailment of motor actions, and he would comply to a request by an entirely different motion from that which he was directed to perform. It was noted, however, that subconsciously or spontaneously the patient could perform these movements when the necessity arose. The so-called ideatory apraxia, as far as could be judged, did not exist. The study of the first disturbance (limb-kinetic apraxia) revealed a marked improvement, especially in the last week. From almost utter helplessness, a condition which could not be accounted for by his local sensory motor disturbances, the patient has gradually begun to assume normal duties of eating and dressing with the aid of his hand, and at present rarely requires aid in the performance of these functions. The peculiar derailments noted in the second form of apraxia (ideokinetic) disappeared at the end of the eighth week, and have shown no tendency to appear.

The study of the aphasic disturbances has likewise been an interesting feature of this case. Spontaneous speech has shown the most erratic and striking changes. Eighteen hours after operation the patient showed an improvement which has never been equaled since then. At this time we held a 20-minute conversation, during which time his speech was fluent, easy, rapid and marked by not more than two or three mistakes. This change was noted immediately by the patient, who remarked on it. Following this phase, at examination three weeks later, he was making quite frequent mistakes—perhaps roughly about half as many as before operation. With periods of regression sketched on a broad background of progressive improvement, examination thirteen weeks after operation disclosed, as rare occurrences, mistakes in spontaneous speech, possibly one mistake being made in every one- to two-minute conversation. It was noted that the mistakes were corrected rather rapidly, a condition which had not been seen before. The patient says that he was involved in a long discussion several days previous, and was informed

by his son the next day that speech mistakes were very rare. The Sunday previous the patient was called on in church to make a speech and was able to get up without difficulty and tell the assemblage that he had been sick for a long time and did not wish to strain himself attempting to talk publicly. Even under this excitement the patient volunteers that he made no errors.

The tests made four weeks after operation in the repetition of spoken words showed an ability to repeat words with great precision. Following this there was a period during which quite marked difficulty was experienced in this act, but this soon passed away. In the last three weeks repetition has been excellent.

The ability to read aloud has perhaps shown the greatest improvement. Such titles as those on magazines could be read at the end of the eighth week with some difficulty but with much greater facility than previously. The patient says that within the last two weeks (from ten to twelve weeks after operation) he has been able to repeat names that have been on the side of wagons, headlines on newspapers, and various other names which before this time he was entirely unable to transfer into speech, and tests uphold his statements. Legends are read with little difficulty.

Spontaneous writing shows a distinct improvement. At present when asked to write short phrases on a given subject he is able to do this immediately and fairly legibly.

Perhaps the only improvement in writing to dictation has been noted in the time taken to write a short phrase. Twelve weeks after operation the patient, though unable to write legibly, is able, nevertheless, to write immediately and without the continual repetition necessary before. On copying words and letters the patient shows little improvement in legibility, but the response is almost immediate.

In the addition and recognition of numbers there is an almost normal state of affairs. The patient still shows his ability to tell time immediately and he is able to pick out of ten objects each one as it is named. Several weeks after operation there was some hesitancy in this act. The use of these objects has always been recognized fairly well, but it is only lately that the patient has been able to express very clearly the various words.

The symptoms of intracranial pressure have been as follows: Blood-pressure has decreased from 200 mm. by an irregular descent to 160. The pulse fell from 60 down to as low as 52 three weeks after the operation, and gradually and intermittently rose to what was its highest point thirteen weeks after operation, when it registered 84. There have been no vomiting spells or nausea. The eyesight and vision have remained the same.

The psychic state has shown a peculiar course. The patient was emotional to a high degree before operation; there was a comparative stability until about six weeks after operation, when there was an extreme exacerbation of the emotional state, and an inability to utter more than a few words without a crying spell. This condition passed off within the course of a few days, but after that there was a slight tendency toward a depressed feeling. A feeling of encouragement on the part of the patient, and a general return of his good health has been accomplished in the last two weeks by a period of mental stability, which has not been seen in him before. At the present, even now, he is quite easily excited, but in the course of a normal conversation one would not recognize this feature.

Certain features associated with the accumulation and absorption of subdural and extradural fluid at the seat of operation are perhaps worthy of consideration. The wound healed by first intention. Stitches were removed the third day. The final dressing was made on the tenth day. About five weeks after operation there was noticed on deep palpation over the trephine holes what seemed to be a slight accumulation of fluid which would give fluctuation on deep pressure. This condition persisted for a week, and it was impossible to tell whether this was due to accumulation under the dura or to one extradurally located. From palpation it was judged that the dura was lifted and made rather tense

under the trephine holes. This condition passed off after the eighth week. What is interesting to note is that associated with this probable subdural collection of fluid the psychic state was greatly disturbed and that the hand was in one of its periods of great regression at this time. Likewise, at this time, also, the aphasic symptoms showed an exacerbation which rapidly disappeared, hand in hand with the disappearance of the fluctuant accumulation.

CONCLUSIONS

The interesting points concerning this case have been:

1. The history, which suggested the hemorrhagic destruction of brain tissue with aphasic symptoms, followed later by an increase in the symptoms, which indicated a progressive, growing lesion.
2. The rapidity with which the motor and sensory disturbances became evident.
3. The drainage of the cyst by a subdural route made necessary, in our desire to avoid external drainage, by the jelly-like consistency of the brain tissue, which absolutely precluded the possibility of manipulative procedures in this region.
4. The accumulation of fluid under the dura at about the sixth week, as demonstrated through the trephine holes, and the associated psychic and sensory-motor disturbances.
5. The absorption of this fluid with a consequent improvement in the regressive symptoms noted with the previous accumulation.
6. The complete disappearance of the Jacksonian epileptic attacks and of the dragging of the foot, the striking improvement in the motility of the right hand, the marked diminution in the aphasic symptoms, and the betterment, often striking in character, of the sensory, stereognostic, apraxic, ataxic and position-sense disturbances.

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A CLINICAL CONTRIBUTION TO THE DIAGNOSIS OF EPILEPSY *

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It may not be out of place at this time to make a further report on some studies of epilepsy that have engrossed my attention for several years. The subjects treated comprise the following:

1. The nature and character of the epileptic voice-sign.
2. The outcome of high-dosage administration of bromid for rapidly recurring petit mal.
3. The practical results in Roentgen-ray analysis of gastro-intestinal tracts of epileptics.
4. A short disquisition on the variations of the sella turcica in the recent state of epileptics as shown by Roentgen-ray analysis.
5. A graphic chart for recording the quantitative daily epileptic discharge in severe forms of epilepsy.
6. The differential diagnosis of psychogenic convulsions from genuine epilepsy, together with a plea for the establishment of a central laboratory of research into the nature and treatment of epilepsy.

THE EPILEPTIC VOICE SIGN

In 1907 I described what I called the epileptic voice sign, and through a method devised by Dr. Scripture

* Read before the National Association for the Study of Epilepsy, Baltimore, May 25, 1914.

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we succeeded in making accurate records and charts of it. The defect was shown to be in the expressionless quality of the epileptic voice. It usually renders the frank epileptic incapable of singing beautifully or speaking well. When the voice defect is once pointed out it is obvious to any one. Instead of the continual rise and fall in melody the vowels and phrases run along on even tones. The speech of the epileptic may thus be designated as "plateau speech"; that is, the melody proceeds by even steps. There is also a tendency to monotony, that is, the successive sounds do not vary much from each other as in normal persons.

Although at the time of the report I expressed the opinion that probably the speech defect developed *pari passu* with the disease, I have since found that this is not the case, inasmuch as many epileptics that I have examined since my first report present the defect in a marked degree although but two or three seizures may have occurred. Again, I have recently examined a number of epileptic individuals in whom there has been an arrest of their disease for several years, and in spite of this prolonged arrest or cure, the voice sign persists nearly if not quite as marked as when the disease was active. One must therefore relegate the sign to a part of the make-up of the epileptic constitution, quite independent of the seizure phenomena *per se*. It is true that by appropriate exercises epileptics can learn to speak normally for a time, but the voice readily relapses to the epileptic type through negligence, and indeed, two of my private patients whose epilepsy was arrested for several years took a long and intensive training to remove this voice defect, but have relapsed to their former epileptic type of speech, although all epileptic manifestations have remained continually absent.

It is interesting to note that this voice sign is not the expression of a type of congenital feeble-mindedness so frequently postulated as the essential mental make-up of the pre-epileptic state of epileptics, which mental defect may be proved to exist in perhaps the great majority of the early epilepsies. To prove that the foregoing is true, I will state that in a study of ten selected cases from private practice the voice sign is present in all, although by various carefully given intellectual tests they in no wise suffer any deficit in the intellectual field. Indeed, two of the series were college graduates of no mediocre standing in their respective classes.

It may not be necessary to say that all extraneous causes for the presence of the voice sign such as station in life, bringing up, nationality and sedative treatment have been ruled out. Further, it may be said here that an analysis of the voice sign of some of the ordinary types of feeble-mindedness found in a series of children and adults has proved that their voice type was rather distinctive of another sort of defect entirely. If I were to hazard another guess at this late day, I should say that the voice sign is a part of the epileptic constitution that concerns a fault in the full elaboration of the functioning of speech in which the elemental adjustment of inhibitory control was absent. It is somewhat akin to the peculiarity shown in the awkwardness and lack of smoothness of other volitional movements, both voluntary and involuntary in character, that have so often been referred to by the older writers as the disorders of motility in epileptics independent of seizure periods such as was extensively studied by Reymond years ago. The voice sign is therefore psychophysical in the character and import.

While the epileptic voice sign has been incorporated in many text-books, I believe that it has not yet received all the attention it deserves at the hands of clinicians, especially now, when the necessity of sharper distinctions between affect epilepsy or psychogenic convulsions and the genuine malady has grown to be of so much importance.

HIGH DOSAGE OF BROMID IN RAPIDLY RECURRING PETIT MAL

Several years ago I reported on a new and rather rare form of rapidly recurring petit mal epilepsy and gave the details of the bizarre attacks in persons affected by it. Inasmuch as no similar cases have been placed on record since that report, the subject may be thought of little general clinical importance, but two or three points about the disorder are worthy of comment. I have seen one other such case since my report. The attacks in this peculiar form of epilepsy, it will be remembered, were in most instances a simple awakening from sleep, and the attacks occurred a hundred or more times in a single night. The patient no sooner fell asleep than the attacks began, either day or night. In one case as many as 300 separate and distinct attacks occurred in a single eight hours of sleep at night.

The patients usually awaken from deep sleep; the eyes are opened widely; the pupils are dilated and irresponsive to light; the head is moved from side to side. There is an anxious and furtive look in the face. The face may be congested or very pale, and is usually the one or the other to an extreme degree. In a few seconds after the onset the patient executes some incredibly rapid movements of the hands or feet, but with no clear intent or purpose, such as is seen in somnambulistic states. For instance, the patient drags on the bed, executes kicks aimlessly in space, beats his head, thigh or chest in a senseless way. He may spring in the air or turn somersaults rapidly. Sometimes patients exhibit attention when spoken to but they most frequently make no coherent reply. Unless disturbed, the patient soon passes into normal sleep at the end of the attack.

In Case 1 the patient met an accidental death after the petit mal had ceased three months. In Case 3 the patient relapsed after a year or more of freedom from her disease; grand mal attacks recurred, and she died of tuberculosis two years thereafter. In Case 4 the patient remained well for three years and then relapsed.

CASE 2.—This case, about which I shall make more extended report, was that of a young unmarried man who came under observation and treatment when he was 21 years old. His disease had originated when he was 18. The family history was negative so far as could be learned. The first seizure was that of petit mal, a turning of the head to the left, and the body was rotated several times to that side. The second seizure was of sufficient physical violence to throw the patient from his bed. The usual and ordinary doses of bromid sedatives stopped the seizures for a time, but later they recurred several times a day, but were always more frequent at night. In a six months' period of observation this patient had over 600 attacks of the peculiar petit mal previously outlined in this paper, and twenty-three typical grand mal attacks. In the next three months under the high dosage of sedatives he had but three grand mal diurnal attacks and no paroxysmal awakening seizures. Three months after, all epileptic manifestations ceased entirely and they have not recurred since. Sedatives were discontinued three months after, or nine months

after the high-dosage plan was installed. He has been entirely well for thirteen years; has a good position as traveling salesman, is married and has two apparently normal children. He is in robust health physically and mentally. The point of special interest in these cases is that the peculiar attacks were immediately increased by the ordinary doses of bromid (from 60 to 120 grains daily), but as the dose was increased from 120 to 180, or even to 230 grains daily, as in the case with recovery, detailed above, all attacks ceased.

The process of treatment was undertaken with the greatest care. The principle of high dosage of bromid may be stated as a form of hyperbromidism, bromid intoxication or poisoning. The drug was given in a steadily increasing dose, as that of iodid in specific disease. The patient had high rectal irrigation once or twice daily to reduce the amount of congestive catarrh, eliminate toxins induced by faulty metabolism or deficient oxidation, and for its diuretic effect. The patient was also given prolonged hot packs and baths at night for diaphoretic effect, and cold douches, sprays and cold drip-sheet treatment mornings to stimulate the peripheral sensory nerves and to preserve vasomotor tone. Vigorous deep massage was steadily maintained to cleanse the muscular circulation. The inordinate tendency to local stasis of circulation in the skin under such extreme sedation and its consequent depression of the skin function shown in acne, etc., was corrected by face packs, hot moist bran applications, and mild stimulation of ointment applied at night. Mouth and nasal cleanliness, occasional lavage of the stomach and large quantities of aerated Vichy water (two or three quarts daily) were necessary. Respiratory gymnastics were not forgotten.

The disorder might be considered as a paradoxical narcolepsy. While the condition is surely rare it is by no means the intractable form of epilepsy noted by Herpin and Delassauve. The recent case which has not yet been placed on record behaved in the same clinical manner as those above noted and was given the same treatment. The patient has now remained two years free from his paroxysmal awakening attacks, the last year without any sedatives, and has shown no other manifestations of the epileptic disorder.

GASTRO-INTESTINAL ROENTGENOSCOPY

Last year Dr. Bushy and I undertook to analyze thoroughly the gastro-intestinal tract of a small but select group of epileptics, and a report was made at the American Neurological Association in Washington. We found an abnormal position of the various parts of the gastro-intestinal tract present in every case examined. We were not then, nor are we yet, able to explain the genesis of these defects in epileptics. We presume, however, that it is not greatly dissimilar to that inducing the same condition in other persons not suffering from epilepsy. I believe that every case of beginning epilepsy ought to be thus analyzed whenever a markedly disordered digestion is in clinical evidence. In a few instances we demonstrated that the abdominal belts as ordinarily applied were entirely useless to replace abdominal viscera; neither the prolapsed splenic nor hepatic flexures were altered in the least by such appliances. It may be possible that the binders applied in the Trendelenburg position may be of service in this respect.

A point of considerable practical moment following these Roentgen-ray examinations has been a more or less definite indication to just what parts of the abdomen one should apply kneading and massage movements over the great intestine. I have found this therapeutic procedure of the greatest value, particularly when there has been a tendency to stasis in the

ascending colon. One must remember that in *not* a few such cases of ptosed colon disorders but a little functional aid is all that is frequently needed. This view probably accounts for many simple practices being efficient, for a time at least, in restoring a relatively normal function of the colon in constipated persons. After all, the functional test of efficiency is the final proof of the value of any treatment for colon stasis. The outcome in such cases is the more easily rationalized if we know the relative position of the viscera as shown by Roentgen-ray examination of the intestinal tract. It may be added here that the reexamination of two cases of colon stasis several months after an improved functioning of the bowels had taken place showed no essential change of position in the structures which had been previously analyzed by the Roentgen ray. However this may be, we still believe that Roentgen analysis of the defective digestive tracts of epileptics is of both diagnostic and therapeutic value. It is an excellent supplement to the chemical and bacteriologic tests already in use. Close attention to the digestive tract forms a prominent part of any comprehensive hygienic plan of treatment in epilepsy.

VARIATIONS OF THE SELLA TURCICA

The foregoing subject leads us naturally to the next, a Roentgen study of the variations of the sella turcica as shown in the recent state in some epileptics. In a general way one may state that Roentgen-ray work on the head, particularly to gain valuable information of a positive nature, has not been much improved on, and our Roentgen knowledge of the variations in the cranial viscera has had no such advancement as that of the abdominal viscera. There is little opportunity as yet for us to make parts of the brain denser than others so the different parts of the cranial content may be made distinctive. It is true, however, that improved Roentgen technic has made possible an excellent examination of the entire bony envelope of the brain both inside and out. Even large tumors or abscesses in the brain, though they may be of considerable density, are infrequently recognizable by Roentgen ray. It seems therefore that a great step must still be taken before we shall discover a method of Roentgen analysis of actual brain alterations, such as minute focal or general gliosis of cortical tissue which has been postulated as the morbid anatomy of the epileptic brain. The idea is, however, within the scope of possibility.

In the meantime a new question in Roentgen analysis of the epileptic cranium has arisen: what rôle the ductless glands play in the development and continuance of epilepsy itself, and particularly the pituitary gland. The remarkable impetus the whole subject of the function of the pituitary gland and the modifying influence which its abnormal functioning has on the rest of the body received great acceleration from the admirable work of Cushing in this special field. The interest in the different functions of the various glandular structures embraced in the pituitary has caused not a little inquiry about the bony envelope of the gland itself, the sella turcica. In such an investigation one must not neglect the commonness of variation in the epileptic cranium, a fact emphasized again and again in anthropologic studies of such individuals. Nevertheless many of us have noted rather remarkable changes in the posterior clinoid processes. They often hook over so as to nearly close the sella cavity; in a small clinical material of a score of cases now in my hands but three or four of this number present this pronounced-sella

variation. It is, of course, impossible for one to say just what influence this bony variation may have on the posterior lobe function. Certain it is that the cases showing this condition of the sella present no physical abnormality or variation in the epileptic state different from those not possessing it. Two of my patients who showed marked alteration of the sella were given pituitary extract hypodermic medication without any apparent alteration of the epilepsy for the better.

One cannot help but think that any such empiric medication must come to naught, especially in view of the fact that one neither knows the real nature and pathology of the disease, nor the nature and function of the pituitary secretion. Even if the pituitary secretion were the proper one to be supplied in the epileptic state, any of the present methods of administration must be considered too crude in practice when compared with that by which Nature supplies the same secretion in daily bodily metabolism. This statement is true in spite of the much overworked parallelism of thyroid medication in cretinism and allied states of myxedema. Again, a pure and properly prepared pituitary extract of the posterior lobe is probably not on the market today.

THE QUANTITATIVE DAILY EPILEPTIC DISCHARGE

For some time I have been interested to determine and measure the amount of dynamic loss to the epileptic in his seizures, this to be measured by a quantitative scale in order that it may be chartered in a graphic curve. The idea is the more interesting when the epileptic attacks are frequent and vary in character so that the ordinary record, wherein single attacks are reported, is often misleading to one hastily viewing them. In many such cases I have employed a chart similar to the one shown here. We find recorded here by daily analysis the urine tests for albumin, indican, total solids, urea, and the number of hours of exercises the patient indulges in. The seizure record is made in a graphic chart by giving a definite small percentage value to the slightest psychic episodes which the patient has and then gradually grading the severer attacks to the largest percentage for the grand mal attacks. By this scheme one gains a much clearer relationship of the amount of epileptic discharge that

obtains than by the ordinary employment of numerals for the seizure attack. I hasten to add, lest some one may ask for the individual interpretation of the scheme, that I am not ambitious to say just what this chart proves in any causal relationships in the curves.

DIFFERENTIAL DIAGNOSIS

Since the interesting and perturbing advent of the psychoanalytic school, epileptologists have experienced another partition of their clinical garment of epilepsy as an established disease entity. There has been a special rendition of the petit mal type. Out of this group more especially has been built up the so-called affect epilepsies, or better, the psychogenic convulsions of the neuropathic. It may seem surprising to many of the uninitiated that inasmuch as the so-called genuine epilepsy is generally recognized as an organic disease, the psychogenic seizures should be in any way compared with the former. It largely

goes to prove on what slender basis an organic disease entity may be postulated when its integrity depends on group symptoms or a syndrome without exact knowledge of its underlying pathology. I venture to say that even many skilled clinicians to-day depend largely on the description of the seizure type for a final diagnosis of the disorder. Only in a secondary way do they take cognizance of the primary epileptic constitution and the secondary deterioration of the malady as well as the physical stigma of the disease. It may seem that the latter

statements appear superfluous, but it should be borne in mind that not a few of us have seen many institutional cases in their very beginning when the diagnosis has been by no means easy. In my institutional life with epileptics I often wondered why many treatises on epilepsy devoted so much time and space to the differential diagnosis of epilepsy; I have since learned better. Given a poor description of some sort of convulsive attack by an excited and distraught relative, one has need of the keenest intuitive powers and the most careful examination before making a certain diagnosis. To us extramural physicians, therefore, the advent of the psychogenic type of seizures is especially perturbing. While nearly all old text-books emphasized the infrequent but certain occurrence of epileptoid convulsions, and, indeed, even true attacks

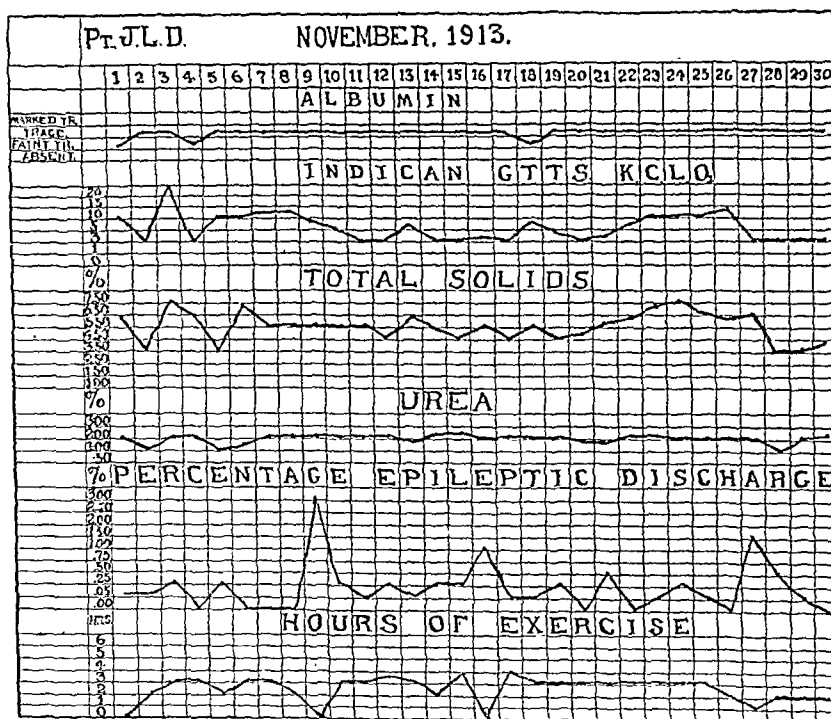


Chart showing a method of graphic tabulation of daily record of albumin, indican content, total solids, urea output of the urine, and hours of exercise contrasted to a graphic curve of the epileptic state in which the latter is estimated on a basis of percentage or scale. The slightest attacks, psychic in character, are given a value of 50 per cent., while the severest, grand mal attacks, are valued as 100 per cent. The method is of greatest use in recording epileptic states of maximum severity in which one or more attacks occur daily.

emotionally induced in the otherwise frankly epileptic, these statements gradually lost place in modern works until to-day it reappears in many clinical studies almost like a new fact, that many attacks in epileptics are emotionally induced. For some time the situation has been made the most of by many quacks in dealing with many excitable and neurotic epileptics. Any one having much to do with epileptics, especially one living in close contact with them in colonies and institutions, daily witnesses true epileptic attacks psychically induced. Many types of peculiar seizures are also seen which are not epileptic at all but possess many characteristics akin to genuine hysteric convulsions. No two neuroses, any more than two organic nervous disorders, are mutually exclusive. A luminous essay might easily be made from a study of the various psychoneuroses seen in epilepsy. Many phenomena now classed as epileptoid or epileptic manifestations such as the epileptic twilight state, day dreams, temporary absences following emotional affects, frights, panics, distractions, pure phantasies and a notable criminal disposition shown in cruelties and assaults, may all be shown in part if not wholly to be due to outbursts of incompletely repressed affects. There can be no doubt that many such symptoms compared with the same occurring in pure psychoneurotics are in no respect dissimilar in manifestations or cause. Not a few of the so-called reflex and traumatic epilepsies of the past have been but thinly disguised psychogenic convulsions. One must bear in mind that in such cases the ordinary so-called stigmas of hysteria are absent, but even tongue biting and incontinence of the bowels and urine may occur and yet the disorder be psychoneurosis. I have seen two cases of the latter sort proved out by observation and treatment. However, true that in the majority of epileptics tongue biting and passing of urine in the attack may be good evidence for an organic or genuine epilepsy, one needs to remember that such symptoms *can* occur and the case not be one of epilepsy.

In the light of the foregoing it is easier now to make disposal of many reports of atypical and bizarre epilepsies, especially such as have been reported by Brush, Newmark and Sanger Brown. It is obvious, therefore, in a given case of epilepsy which shows none of the make-up of the epileptic constitution and no physical or mental deterioration from the malady, that one should consider such a case with the greatest care in the light of our knowledge of affect epilepsy or a psychogenic convulsant in a neuropath. One also should remember that a few cases of dementia praecox have epileptoid attacks. I meet such patients almost weekly. If time permitted I could cite many illustrations of the fact. At present I have no less than four cases of mixed types of convulsive attacks to diagnose differentially. In a brief statement it may be said that psychoneurotic episodes are differentiated from the ordinary types of so-called genuine epilepsy in that the former are symptomatic expressions of incompletely repressed and painful affects, having greater constancy, are often prevented or repressed purely by suggestion, may be displaced or prevented by psychoanalysis and are usually unfavorably influenced by sedatives. The amnesic episodes are purely functional, and intelligence tests show no defects. The promptness and completeness by which the affect epilepsies may be cured make one wish that ordinary epileptic states were more frequently of this less grave nervous disorder. I attempt a partial analysis of every

case of genuine epilepsy in the hope of removing many of the psychic elements that may act as irritants to the true disorder. It often fortifies the ground gained in the improved and arrested cases of epilepsy. Careful psychanalytic studies in true epilepsy are still to prove a mine of valuable and practical facts. It may yield data of practical points in treatment.

I wish to emphasize the great importance of establishing a central laboratory for research in convulsive disorders, the organization of which I made the basis of an address several years ago in the New Haven meeting of this association. Almost every other grave and wide-spread disorder which afflicts humanity by the thousands has had its special private or state endowment, and its laboratories busy in research. In the general study for the betterment of such human scourges as cancer, tuberculosis and insanity the cause of research into the nature and prevention of epilepsy seems to have lagged far behind. I am sure that no one thing would advance human welfare more than such a central laboratory for intensive research into the cause and prevention of epilepsy.

I trust the foregoing clinical exposition is of sufficient moment to warrant my further report on the several subjects at this time, and that it will be of sufficient interest to stimulate further clinical research into the still obscure clinical manifestations of this strange disease.

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A CULTURE OF B. TUBERCULOSIS FROM THE BLOOD POST MORTEM OF A CASE OF MILIARY TUBERCULOSIS

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A careful review of the literature on tubercle bacillæmia has failed to show a single instance in which the tubercle bacillus has been grown from human blood. A few unsuccessful attempts to obtain such cultures are cited by Bergeron¹ in his review, which is dated 1904. Anderson² in 1909 made blood cultures from forty-eight cases of tuberculosis, all of which were negative. He was successful in obtaining three positive blood cultures from eight artificially infected rabbits, and this is the only recorded instance in which the tubercle bacillus has been cultivated from the blood of tuberculous subjects.

The reasons for such uniformly negative results are easily seen. Any one who has attempted to grow tubercle bacilli, even from material rich in organisms and uncontaminated, is familiar with the difficulty of getting the growth started. Complete aerobiosis, a carefully regulated temperature, carefully titrated mediums, and proper moisture are all necessary to induce Koch's bacillus to multiply on artificial soil. Cultures from the blood present several obstacles to the attainment of the above ideal conditions, chiefly the fact that the few organisms which might be present in the small amount of blood utilizable will in all probability be buried in a mass of red cells and fibrin if the blood is poured over solid mediums, and so be shut off from the access of oxygen in the air. Even should

1. Bergeron, André: Etude critique sur la présence du bacille de Koch dans le sang, Thèse 223, Paris, 1904.

2. Anderson, J. F.: The Presence of Tubercle Bacilli in the Circulating Blood in Clinical and Experimental Tuberculosis, Bull. 57, Hyg. Lab., U. S. P. H. S., 1909.

growth begin and a colony develop, it would be extremely difficult to find on the rough and heterogeneous surface of such a culture. Poured agar cultures and cultures in liquid mediums are open to a similar objection, namely, the conditions of partial anaerobiosis. The ideal method would seem to be to take the blood in sterile distilled water, centrifugalize at high speed and spread the sediment over the surface of suitable solid mediums. The writer has twice attempted this method without success, but still believes it to offer the best chances of success.

The other main reason for previous failure is the fact that tubercle bacilli cannot be demonstrated in the blood by any valid method in more than a small percentage of cases of tuberculosis. Fraenkel³ reviewed the whole subject very thoroughly in 1913, and after concluding that animal inoculation is the only safe test for the presence of tubercle bacilli in blood, compiled figures from the literature to show that about one hundred positive inoculations had resulted from five hundred experiments. He adds that many of these positive results are of questionable authenticity. In many instances the antiformin method had been used and the finding of acid-fast bacilli in tissues without gross tuberculous changes had been accepted as sufficient evidence of tuberculosis.⁴

It may therefore be of interest to compile the results of inoculating guinea-pigs with the blood of tuberculous patients and to note the number of cases in which the presence of the tubercle bacillus has been demonstrated by gross tuberculous changes in the test animals. Collecting the statistics embodied in papers⁵ published in the last three years (1911-1914), I have found that the blood from 1,060 cases of tuberculosis was so tested and that forty-five of the guinea-pigs used showed gross tuberculous changes. These figures indicate 4.2 per cent. positive results, but the actual figure is undoubtedly even lower, because in many of

the tests two guinea-pigs were used and in some instances, at least, both of them became infected.⁶

In view of this low figure it is clear that most attempts at cultivating *B. tuberculosis* from the blood are foreordained to failure. This is true particularly for cultures made *intra vitam*. With blood cultures made at necropsy, however, the outlook is more promising. Meisel⁷ reported eight positive inoculations from eleven cases, and Seidenberger and Seitz⁸ reported nine out of twenty-six, all the guinea-pigs showing gross changes. These figures, the only ones that I have been able to find bearing on this point, show 38 per cent. positive inoculations from blood taken at necropsy. It appears, therefore, that shortly before death tubercle bacilli appear in the blood stream either in greater numbers or with greater frequency than before this time.

Between February and July, 1914, blood cultures were made at the Babies' Hospital from twenty-one cases of military tuberculosis. Ten cultures were made during life, fourteen after death, and in three cases cultures were made both before and after death. The quantity of blood taken varied from 1 to 5 c.c. Of these cultures only the one here reported was positive. In one other case a number of acid-fast bacilli were found in the culture at the end of two weeks, but the growth—if it was a growth—failed to develop further and later the contents of the tube failed to infect a guinea-pig. In another case the numerous acid-fast bacilli found in the smear were shown to have come from distilled water used in making the preparation for microscopic examination. These experiences emphasized to the writer the dangers of purely microscopic diagnosis in tuberculosis and the absolute necessity of corroboration by animal experiments.

The patient from whom the positive culture was obtained was a white boy 2½ years old, whose tuberculous infection dated back about two months and was the sequel of an attack of whooping-cough. The diagnosis of tuberculosis was made during life and corroborated at necropsy. Cheesy bronchial lymph-nodes, extensive caseous change, with a cavity in an area of old bronchopneumonia in the left upper lobe, tuberculous ulcers in the intestine and military tuberculosis of the lungs, spleen, liver and kidneys, were the principal pathologic findings.

Blood was taken for culture in the following manner: After opening the thorax, the pericardium was slit with scissors and the edges folded back. An area of about 2 x 2 cm. over the right ventricle was carefully seared with a red-hot knife. The knife was again heated and immediately plunged into the heart cavity. A sterile pipet was introduced into the opening and a little over 1 c.c. of fluid blood was withdrawn and transferred directly to a plain agar slant. The tube was laid so that the blood covered the surface and, when the necropsy was completed, sealed with paraffin and laid in a similar position in the incubator.

This culture, not originally taken for the purpose of demonstrating tubercle bacilli, remained apparently sterile, and it was decided to keep the tube as part of a series of blood cultures from tuberculous patients, which was begun at this time. The tubes of this series

3. Fraenkel, E.: Nachweis von Tuberkelbacillen im strömenden Blut. Schmidt's Jahrb. d. Med., 1913, cccxvii, 317.

4. In view of the work of so many investigators (Brem, Walter V.: Investigation of Blood for Tubercle Bacilli, THE JOURNAL A. M. A., Sept. 18, 1909, p. 909. Von Lehnmann, A.: Eine Fehlerquelle bei der Antiforminmethode, Deutsch. med. Wchnschr., 1913, xxxix, 1556. Holmes, E. B.: A Study of the Alleged Presence of Tubercle Bacilli in the Circulating Blood; Am. Jour. Med. Sc., New Series, 1910, cxxxix, 99. Kahn, E.: Zum Nachweis der "Tuberkelbacillen" im strömenden Blut, München. med. Wchnschr., 1913, cx, 345. Dreesen, H.: Ueber das Vorkommen von Tuberkelbacillen im strömenden Blute, Med. Klin., 1913, ix, 580.) proving that acid-fast bacilli are frequently present in distilled water and therefore in reagents made up with distilled water, it would seem that the time has come to reject the antiformin method and all other methods in which the diagnosis of tuberculosis is made from simple microscopic demonstration of acid-fast bacilli and to discard the results of previous experiments based on such methods.

5. Rumpf: München. med. Wchnschr., 1912, No. 36. Bernard, Debré and Baron: Recherches sur la bacillémie chez les tuberculeux, Bull. Soc. d'étude scientif. sur la tubercul., 1912, ii, 154. Querner, E.: Ueber Vorkommen von Tuberkelbacillen im strömenden Blut, München. med. Wchnschr., 1913, cx, 401. Baemeister: Virulente Tuberkelbacillen im Blut nach der diagnostischen Tuberkulininjektion, München. med. Wchnschr., 1913, No. 9, p. 343. De Verbizier, A.: Nouvelles recherches sur la présence du bacille de Koch dans le sang circulant des tuberculeux, Rev. de méd., 1913, xxxiii, 161. Fraenkel, E.: Tuberkelbacillen im strömenden Blut, Deutsch. med. Wchnschr., 1913, xxxix, 737. Rist, Armand-Défilie and Lévy-Bruhl: Sur la prétendue bacillémie des tuberculeux, Bull. Soc. d'étude scientif. sur la tubercul., 1913, iii, 19. Rothacker and Charon: Das Vorkommen von Tuberkelbacillen im strömenden Blut, Centralbl. f. Bakteriol., 1913, cxix, 478. Elsaesser, J.: Tuberkelbacillen im Blutstrom bei Lungentuberkulose, Beitr. z. klin. Tuberk., 1913, xxvi, 367. Kachel: Ueber Tuberkelbacillen im strömenden Blut, Beitr. z. klin. d. Tuberk., 1913, xxviii, 275. Moewes and Brautigam: Tuberkelbacillen im Blute, Deutsch. med. Wchnschr., 1913, xxxix, 2031. Klopstock and Seligmann: Zur Frage des Vorkommens von Tuberkelbacillen im strömenden Blut, Ztschr. f. Hyg. u. Infektionskrankh., 1913, cxvii, 77. Haas, W.: Ueber den Nachweis von Tuberkelbacillen im strömenden Blut bei chirurgischen Tuberkulosen, Beitr. z. klin. Chir., 1914, xc, 78. Storath, E.: Ueber Bedeutung und Auftreten virulenter Tuberkelbacillen im Blut nach der diagnostischen Tuberkulininjektion, Ztschr. f. Tuberk., 1914, xxii, 1. Mayer, A.: Ueber das Vorkommen von Tuberkelbacillen im strömenden Blut und in der menschlichen Milch, Ztschr. f. Tuberk., 1913, xxi, 447. Seidenberger and Seitz: Ueber das Vorkommen von Tuberkelbacillen im Herzblut bei chronischer und latenter Tuberkulose, Virchows Arch. f. path. Anat., 1914, cxv, 89. Liebermeister: Deutsch. med. Wchnschr., March 13, 1913 (Discussion).

6. It has been objected that guinea-pig inoculation is not a perfect test for the presence of tubercle bacilli in tissues because one bacillus will not certainly cause infection. This is true. Nevertheless, since purely microscopic methods are not above suspicion, animal inoculation is at present the only satisfactory test. It is also very delicate since Selter (Vortrag auf d. Niederrhein, Ges. f. Nat. u. Heilk., Bonn, July, 1912, Discussion), as is well known, showed that ten bacilli almost certainly infect a guinea-pig.

7. Meisel, W.: Vorkommen von Tuberkelbacillen im Blute bei der allgemeinen Milartuberkulose, Wien. med. Wchnschr., 1884, Nos. 39 and 40.

8. Seidenberger and Seitz: See Footnote 5.

were examined microscopically once or twice a week. In the process of examination the contents of the tube were scraped with the platinum loop and partly redistributed over the surface. This not only gave access of air to the bacilli present but probably formed a layer of serum on the agar surface in which the bacilli could multiply. It is certain that plain agar is not a suitable medium for initial cultures of the tubercle bacillus and the successful growth in this case must be attributed to some such fortuitous circumstance.

After two weeks' incubation two or three acid-fast rods were seen in smears from the culture but as these were not perfectly typical no transplants were made. When the culture was one month old a clump of acid-fast bacilli, consisting of about twenty organisms, was found. These looked much more like genuine tubercle bacilli but were so closely clumped that identification was not then clear. Transplants were now made to glycerin-veal-agar, blood-agar, coagulated egg and to tubes of the egg-broth medium recently devised by Besredka and Jupille. The last proved to be the most suitable medium and showed at the end of two weeks small crumb-like masses of acid-fast bacilli which were identical morphologically with genuine tubercle bacilli. Transplants were again made and the growth carried, in the same medium, to the fifth generation. Two cubic centimeters of a month-old culture in egg-broth belonging to the third generation were injected subcutaneously into the abdomen of each of two guinea-pigs. Four weeks later one of these died and showed a cheesy nodule at the site of inoculation, miliary tubercles of the inguinal lymph-nodes, tuberculous peritonitis, the great omentum rolled up and caseous and miliary tuberculosis of the liver, spleen and lungs. (Probably in this case the needle had pierced the peritoneum.) The second guinea-pig died five weeks after inoculation and showed enlarged, cheesy inguinal lymph-nodes, partly caseous retroperitoneal nodes and miliary tuberculosis of the spleen, liver, right kidney and lungs.

Smears made by rubbing portions of the spleens of these animals on new, clean slides showed innumerable acid-fast bacilli resembling in all respects genuine tubercle bacilli.

I regard it as a matter of good fortune that this culture, made on an unsuitable medium, should have been successful. The other attempts, as has been stated, all gave negative results. About fifty tubes and flasks in all were inoculated and several methods employed. Among these may be mentioned placing blood in shallow, broad-based flasks containing, variously, glycerin-beef-broth, glycerin-veal-broth without peptone or salt, and Besredka's egg-broth; and in slants or flasks of glycerin-beef-agar, glycerin-bob-veal-agar, coagulated egg and glycerin-blood-veal-agar. In two cases the hemolyzed and centrifugalized blood was spread on glycerin-veal-agar in large, wide-mouthed bottles. In all cases the containers were carefully sealed with paraffin, rubber caps or lead foil. Of the cultural methods named none seems satisfactory except the last. I hope that this method may be tried more fully and believe that it may yield a number of positive results, especially with cultures from the heart's blood at necropsy.

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Babies' Hospital.

RABIES

ITS DIAGNOSIS IN ANIMALS AND PREVENTION IN MAN

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On account of the increasing prevalence of the disease,¹ and in view of the ease with which the general practitioner may administer the prophylactic measures at the home of the patient, even if he is situated at a place some distance from the laboratory which supplies the material for treatment, a brief consideration of some phases of rabies in their bearing on diagnosis and prophylaxis may not be out of order.

Diseases which are contracted by man solely from one of the lower animals afford better opportunities for effectual prevention than other infectious diseases; and when the animal concerned is a large domestic quadruped, the problem becomes easier in proportion to the simplicity with which the animal may be controlled. Rabies has been eradicated in the island of Great Britain, both in human beings and in animals, the measures adopted being merely the muzzling of all dogs and prohibition on the importation of canines except after a quarantine sufficiently long to prevent the admission of a rabid animal to the island. Unfortunately in the United States, owing to state laws, general muzzling of all dogs is impossible, and rabid dogs may pass from one state to another, spreading the disease so that eradication by this means seems impossible for the present at least. Since this is the case, it becomes the duty of each individual physician to familiarize himself with the nature of the disease and its prevention so that each may contribute his share toward diminishing the mortality rate among human beings.

Since rabies is transmitted to man almost entirely by dogs, knowledge of the characteristics and of the diagnosis of the disease in that animal is of more importance than the diagnosis in man himself. Clinically the diagnosis is seldom difficult when the disease is advanced. As Hutyra and Marek² state:

The symptoms of irritation, the aggressive conduct and subsequent paralysis, particularly the appearance of bulbar paralysis, forms a very characteristic picture of the disease, and the diagnosis is made easier by the existing suspicion of infection. Statements that no bite has been received must be taken with reservation, as slight wounds are inflicted not infrequently without the knowledge of the owner. In making the diagnosis the former behavior and temperament of the animal must be taken into consideration.

Laboratory methods when properly performed are sufficient to make a diagnosis, but the work is greatly facilitated and correspondingly expedited if clinical evidence is at hand in addition, and therefore animals which are not manifestly rabid should not be killed as soon as they have bitten but should be confined for observation by a competent veterinarian. If the animal shows no symptoms in fourteen days³ there is no danger of the person bitten contracting rabies from

1. Hart, George H.: *Circ. 129, U. S. Dept. Agric., Bureau of Animal Industry, 1908.* Möhler, John R.: *Farmer's Bull. 449, U. S. Dept. Agric., Bureau of Animal Industry, 1911.* Kerr, J. W., and Stimson, A. M.: *The Prevalence of Rabies in the United States, THE JOURNAL A. M. A., Sept. 25, 1909, p. 989.*

2. Hutyra and Marek: *Pathology and Therapy of Diseases of Domestic Animals, translated by Möhler and Eichhorn, 1, 483.*

3. Hart, George H.: *Circ. 129, U. S. Dept. Agric., Bureau of Animal Industry, 1908, p. 15.*

that bite, while if symptoms appear or the animal dies from rabies within a week or ten days, the Pasteur treatment may be started at once without reference to laboratory diagnosis, although the latter may still be utilized to make the diagnosis doubly sure.

In man the disease is usually very readily diagnosed except in cases in which the bite has been overlooked at the time inflicted or forgotten shortly afterward. It is commonly divided into two stages of excitement and paralysis which follow one another in the order named but without strict regularity in this respect. When patients are seen with no history of having been bitten, the condition is frequently confused with other acute affections of the brain and meninges, and when the diagnosis is made previous to death, it is usually by the exclusion of other causes of irritation rather than from any pathognomonic symptom or symptom complex. The fear of water, which is due to spasm of the glottis from the laryngeal irritation occasioned by swallowing and the condition of general hypersensitiveness during the stage of excitement, or to choking from the entrance of fluids into the larynx during the paralytic stage, is quite characteristic. This spasm or paralysis of the laryngeal muscles also gives rise to the peculiar sound, resembling the barking of a dog when the patient attempts to speak. A positive diagnosis is probably seldom made until after death except in those cases in which symptoms follow a bite from an animal definitely known to be rabid.

A rapid diagnosis of the condition in the laboratory depends on the recognition of Negri bodies in the nerve cells of the brain of the animal.⁴ While the accuracy of this method has been questioned,⁵ and some still adhere to their views,⁶ it is generally accepted among those most active in the work that Negri bodies are constantly present in rabies and absent in health and other diseases.⁷ More recently Noguchi⁸ has successfully cultivated these bodies and reproduced the disease with the cultures. Mohler⁹ gives the results as 96 per cent. positive in rabid animals, presumably dogs.

Certain difficulties may arise in the laboratory examination as a result of lack of care in preparing the material. If the dog is killed early in the disease, the bodies may not have developed sufficiently either in size or number so that they may be recognized by our present microscopic methods. This difficulty would be almost completely eliminated were it not for the almost universal custom of killing any dog on suspicion as soon as he has bitten any one. As is noted above, he should be confined and observed for at least a week, during which, if he is infected with rabies, more definite symptoms than the mere defensive act of biting will develop. The only excuse for killing a dog immediately after he has bitten is in the case of an animal in the furious stage, when attempts at capture alive will in all probability lead to the infection of more individuals. A second difficulty arises from the appearance in the brain soon after death of artefacts which are indistinguishable from Negri bodies by microscopic methods, if the brain has not been properly cared for. It is with a view of diminishing the latter

difficulty that the methods described in the section on preparation of material are suggested.

To further emphasize these two points, namely, the inadvisability of killing the dog early in the disease and the necessity for carefully preparing the material for shipment to the laboratory, it need only be recalled that when a human being has been bitten and the microscopic examination has been indefinite for either of the foregoing reasons, it is necessary to inoculate rabbits before the true state of affairs can be determined. Animal inoculation is practically useless for diagnosis in time to determine the necessity for preventive immunization, for characteristic symptoms seldom develop in animals in less than two weeks, and in order to insure the best results from the Pasteur treatment, it must be begun within the week following the bite. The physical discomfort and expense of this treatment, together with the suspense on the part of both the patient and physician until the results of the animal inoculation are known, surely justify the care in the preparation of the material necessary for a more rapid diagnosis.

PREPARATION OF MATERIAL

In hot weather and at all times of the year when shipment is to be made from points more than two hours distant from the laboratory, it is best to place the material in a clean metal can or box, to solder it shut to prevent leakage or contamination and to place it for shipment in the center of a box filled with ice. If the material can be delivered at the laboratory within two hours after the death of the animal, it is best to forward the head and neck with as little anatomic disturbance of the parts as possible. When shipping from points estimated to be more than six hours distant from the laboratory, in order to insure a diagnosis within a week, it is best to remove the brain, to bisect it in the middle line and place one-half in sterile glycerin and the other half in a 10 per cent. solution of formaldehyd gas. Although this method of preservation prevents the diagnosis from the fresh tissue, it will obviate difficulties arising from decomposition and bacterial contamination, and the part in formaldehyd solution can be readily manipulated so as to give a diagnosis within a week at most. When doing a necropsy on an animal suspected of having had rabies, the contents of the stomach should be noted, since the absence of food and the presence of foreign bodies is perhaps more characteristic of the condition than any feature which can be determined by macroscopic examination. Since the brain and other parts may be infectious, the necropsy should be done with care, and rubber gloves worn lest the operator be infected through small abrasions on the hands.

LABORATORY DIAGNOSIS

Material may be classified according to the methods which must be pursued at the laboratory as follows: first, material received without preservation; second, material which has been preserved either in hardening agents which kill the virus or in fluids which preserve the virulence but to a certain extent limit bacterial contamination of the virus. Unless material intended for examination while fresh is preserved from decomposition during shipment by cold, it is likely to be useless for microscopic examination, since, as was noted above, artefacts appear soon after death. While it is true that certain methods of staining are held to bring out the intracorporeal granules in the Negri bodies and thus

4. Negri, A.: *Ztschr. f. Hyg.*, 1903, xliii, 507, and xliv, 519.

5. Keirle, N.: *Studies in Rabies*, Baltimore, 1909, p. 347.

6. Bloodgood and McGlannan: *Practical Treatment*, Musser and Kelly, Philadelphia, 1912, ii, 606.

7. Ravenel, M. P.: *Modern Medicine*, Osler and McCrae, Philadelphia, 1913, i, 959.

8. Noguchi, H.: *Jour. Exper. Med.*, 1913, xviii, No. 3.

9. Mohler, John R.: *Farmer's Bull.* 449, U. S. Dept. Agric., Bureau of Animal Industry, 1911, p. 8.

Pepper and Packard¹¹ described a case of glioma of the right crus cerebri in a boy 4 years of age. There was left-sided facial and corporal hemiplegia. The tongue protruded to the left and there was transient involvement of the left extrinsic ocular muscles. There was a marked contracture of the arm but none of the leg and there were no headaches, sensory disturbances, hemianopsia or paralysis of the masticatory muscles. Death followed convulsions. At the necropsy there was a tumor the size of a hazelnut seated at the outer and under surface of the right crus cerebri. The microscopic examination showed it to be a glioma.

Benedikt¹² cited a case of a boy of 4 who suffered from headache for six weeks before applying for treatment, at which time there was right-sided ptosis and oculomotor palsy of the same side. The head was turned toward the left and the chin toward the right. There was a tremor of the left hand and leg, which were paretic. The muscles of the lower lip were paralyzed, deviating toward the left. At the necropsy there were a number of tubercles found in the left frontal lobe, in the marginal convolutions, in the cuneus, and in the left cerebellar hemisphere. Finally a tubercle the size of a pigeon's egg occupied the inferior surface of the right cerebral peduncle. This tumor destroyed the right oculomotor nerve. He also cited a second case in a man with pulmonary tuberculosis presenting crossed oculomotor paralysis and hemiparesis with tremor of the paralyzed members.

Kraft-Ebing¹³ described a case in a woman of 41 with tubercle of the right cerebral peduncle. The first symptoms consisted of heaviness in the legs associated with habitual headaches, right-sided tinnitus aurium, vertigo and weakness in the right arm with drawing pains in the right arm and leg. Diplopia and bilateral ptosis developed later and there was paralysis of the superior rectus muscles with pronounced right-sided papillitis. The deep reflexes were enormously exaggerated on the left side and there was right-sided hyperalgesia. There was persistent left hemiataxia. Death ensued at the end of three months. The necropsy revealed a tubercle 13 by 11 mm. in size occupying the entire tegmental nucleus. There was general tuberculosis.

Mendel¹⁴ presented a specimen of tubercle from the brain of a child of 4 years and 9 months of age. The first symptoms consisted of an intention tremor of the right arm which later was followed by a weakness of the right leg, left-sided ptosis and paralysis of the right externus with dilation of the left pupil, which was twice as large as the right. The right side of the mouth appeared paralyzed, the face being drawn toward the left. The tongue protruded toward the right and the right neck-muscles were paralyzed. The right arm also was paretic. Sensation was not implicated. The temperature of the right arm and leg was, however, reduced. A large tubercle measuring 2 by 1.25 cm. was found in the left peduncle. The red tegmental nucleus of the superior peduncle seemed to be completely destroyed. Anteriorly the tumor extended to the left corpus subthalamus. There was some circumscribed meningitis in the interpeduncular space, which would explain the right-sided ocular motor paralysis.

Ramey¹⁵ described a case of alternating paralysis of peduncular origin in a man of 52. Following occasional transitory sensation of tingling in the right foot, there followed a gradual paralysis of the right arm, leg and face. The knee-jerks were exaggerated on both sides. There was some diminution of sensation of the right side and the temperature was much lower than that on the other side. There was paralysis of the left third nerve, including the iris and the ciliary muscles. The right eye showed paralysis of the inferior, superior and external muscles. There was considerable contraction of the fields of vision. The necropsy revealed the presence of a miliary tuberculosis of the lungs. The left peduncle was larger than the right and was the seat of a tumor consisting of an agglomeration of eight to ten small yellowish masses.

Proust¹⁶ cited a case of tumor of the right cerebral peduncle in a man of 32 who two years prior to coming under observation developed headache, vertigo and deafness. Three months previously there gradually developed an incomplete hemiplegia of the left side involving the face. The left forehead appeared much less wrinkled than the right. The left eyelid was opened less easily than the right and protruded more than the right. The pupil was dilated and there was some strabismus. There was some slight diminution of sensation of the left side. He emitted from time to time piercing cries. There was no vomiting, loss of consciousness or convulsions. At the necropsy a tumor the size of an egg was found occupying the right cerebral peduncle. There was distention of the right lateral ventricle. The peduncle was completely flattened.

Ria¹⁷ added a case of a glioma of the left cerebral peduncle in a man of 33. The first symptoms consisted of a slight weakness of the right hand and a month later there developed weakness of the right leg and in still another month difficulty in speech. Later there was ptosis of the left upper eyelid. Tactile, pain and heat sensations were only a trifle below normal. The left pupil was dilated and there was external strabismus. At the necropsy a tumor the size of a nut was found in the left peduncle which extended to the optic thalamus and affected the corpus striatum. It also involved the left large ventricular ganglia. Under the microscope the tumor proved to be a glioma.

Archambault¹⁸ presented a case of complete paralysis of the right ocular motor nerve and incomplete left hemiplegia in a child of 3 years of age. At the necropsy there was a tuberculous tumor the size of a nut in the right cerebral peduncle a little in front of the third ocular motor nerve. There was also a tuberculous lesion of the lungs.

Bouveret and Chapotot¹⁹ described a case of a woman of 22 who awoke with weakness of the left side which was shortly followed by oculomotor paralysis and frequent headaches which were associated with vomiting and vertigo. Two months later there was partial paralysis of the left side of the face and complete left hemiplegia. Sensation to heat and cold was lowered on the left side. A slight ptosis of the right side was observed, but all the muscles of the left eye were more or less involved. The left pupil was larger than the right. There was incipient optic neuritis. About a month later there were left-sided convulsions.

11. Pepper and Packard: *Am. Jour. Med. Sc.*, 1890, exix, 263.
12. Benedikt: *Bull. Med.*, 1889, iii, 547.
13. Kraft-Ebing: *Wien. klin. Wchnschr.*, 1889, ii, 896.
14. Mendel: *Berl. klin. Wchnschr.*, 1885, xx, 468.

15. Ramey: *Rev. de méd.*, 1885, v, 489.
16. Proust: *Progrès méd.*, 1882, x, 187.
17. Ria: *Ann. clin. d'Osped. Incur.*, 1888, v, 82.
18. Archambault: *Progrès méd.*, 1877, v, 718.
19. Bouveret and Chapotot: *Rev. de méd.*, 1892, xii, 728.

and about two weeks after this there was paralysis of the right third nerve and dilatation of the right pupil. Choreiform movements followed shortly after this. The patient died six months after the onset of the symptoms. At the necropsy there was discovered tuberculosis of the lungs. A cherry-sized caseous mass was found at the junction between the gray and white substance at the base of the second frontal convolution of the left side. Both peduncles were the seat of a tuberculous tumor. On the right side the tumor projected toward the occipital horn of the lateral ventricle and extended under the aqueduct of Sylvius, where it destroyed the gray matter.

Beck²⁰ reported a case of hard round-cell sarcoma in the left crus in a male. The first symptoms were attacks in which he would feel weak and experienced a sudden sensation of shock which caused the head and upper part of the body to bend forward and which was associated with vertigo. He also suffered from severe frontal headache. On examination there was found diplopia, the right pupil was smaller than the left, which did not react at all to light, and there was convergent strabismus in the right eye, the left eye remaining stationary. The ophthalmoscope showed a fullness of the veins. The right facial nerve was slightly paralyzed. The tongue protruded straight and there was no speech disturbance. The movements of the right arm and leg were much slower than on the left and the patellar and Achilles reflexes were exaggerated. Two months later there developed complete ptosis of the left side and a slight ptosis of the right. The left ocular muscles were paralyzed with the exception of the rectus

externus. All symptoms became aggravated until death about six months after applying for treatment. At the necropsy a spherical tumor was found measuring 1.5 by 2 cm. situated in the left cerebral peduncle and reaching as far as the ganglia. The oculomotor nerves were flattened by the pressure from the tumor.

Spiller²¹ described a case in a man of 48 years of age who had paralysis of upward associated ocular movements with loss of convergence. The downward movement was difficult, while the lateral movements were intact. The speech was bulbar in character and there was dysphagia associated with constant dribbling of saliva. He complained of headache, extreme vertigo and uncontrollable spells of laughter. Later all associated ocular movements became impaired and there was slight ataxia of the arms.

At the necropsy there was found a tumor of the right cerebral peduncle which measured 2 by 5 mm. and consisted of a sarcoma, possibly endothelioma.

The lowest portion of the tumor was at a point where the fibers of the oculomotor nerves leave the nuclei in large bundles and it extended toward the aqueduct almost to the lowest part of the oculomotor nucleus. A few fibers of the right oculomotor nerves passed through it. Posteriorly the tumor extended a little beyond the aqueduct of Sylvius.

The characteristic symptom complex of tumor of the crus cerebri is said to consist of a hemiplegia on the opposite side to the lesion associated with oculomotor palsy on the same side. This has been termed hemiplegia alterans superior. But in fourteen of eighteen cases collected from the literature and including my own, the hemiplegia was associated with oculomotor palsy on both sides in nine instances (Hunt, Hensch, Kraft-Ebing, Mendel, Rhein, Ramey, Bouveret and Chapotot, Beck, Benedikt) and only in five cases was the oculomotor paralysis unilateral (Sanz, d'Astros and Hawthorn, Benedikt, Ria, Archambault). The close proximity of the two nuclei of the third

nerve explains the frequency of the involvement of the oculomotor nerve on the opposite side. In rare instances the paralysis and oculomotor palsy may be on the same side. Farnell and Burnett described such a case but there was no necropsy. In Pepper and Packard's case with necropsy the hemiplegia and third nerve palsy were on the same side.

The hemiplegia is gradual in onset and is usually associated with spasticity.

In some cases a tremor or choreiform movements are present. In the cases cited in this paper this symptom was present in eight instances (Hensch, d'Astros and Hawthorn, Bouveret and

Chapotot, Raviard and Asset, Blocq and Marinesco, Benedikt (two), Mendel). In d'Astros and Hawthorn's case the tremor consisted of a rhythmic tremor of the forearm in which the movements were from side to side and forward and backward. In Bouveret and Chapotot's case the tremor was choreiform in character. In the case described by Blocq and Marinesco the tremor was like that of paralysis agitans. Also in the two cases cited by Benedikt there was a tremor of the paralyzed limbs. In Mendel's case an intentional tremor of the right arm was the first symptom. The tremor must be looked on as an irritating symptom due to pressure on the pyramidal tracts.

Hemiataxia has been noted, as in the cases of Kraft-Ebing and Spiller. Ataxia was present in both arms in the case cited by myself in this paper.

In rare instances palsy of the opposite limbs may be observed, when according to Oppenheim²² dysphagia and dysarthria may occur.



Enlargement of left crus cerebri.

20. Beck: Virchows Arch. f. path. Anat., 1883, xciv, 378.
21. Spiller: Jour. Nerv. and Men. Dis., 1905, xxxii, 497.

22. Oppenheim: Spec. Path. u. Therap., Nothnagel, Wien., 1896, ix, 125.

Sensory disturbances are present in some cases consisting of contralateral hemianesthesia. Parasthesia and hemihyperesthesia have occurred.

Reduction of the bodily temperature on the paralyzed side has been noted in some cases (Garnier, Mendel, Ramey). This possibly may be referred to vasomotor disturbances due to implication of the substantia nigra. Inordinate laughter occurred in two cases, namely, those of Spiller and Hunt. Of the eighteen cases, twelve were tuberculous tumors (Sanz, Henoch, d'Astros and Hawthorn, Blocq and Marinnesco, Benedikt (two), Kraft-Ebing, Mendel, Ramey, Archambault, Bouveret and Chapotot, Rhein). In one the tumor was a lipoma (Garnier), in three cases glioma (Pepper and Packard, Ria, Hunt), and finally, in two cases the tumor was a sarcoma (Beck, Spiller).

1732 Pine Street.

IDIOSYNCRASY TO ORTHOFORM

T. C. McCLEAVE, M.D., BERKELEY, CAL.

Some months since, a few hours after partaking of soft-shell crab at dinner, a patch of urticaria appeared on the arm, gradually spreading over the body until at the end of twenty-four hours, the entire trunk and head were involved. Curiously, at no time did the eruption go below the waist nor were the hands involved. The skin of the affected parts finally was of a dusky red color, with a sprinkling of darker areas closely resembling the eruption of measles. There was a uniform brawny thickening of the skin, which on the face produced a most grotesque distortion of the features and rendered it difficult to open the eyes and mouth. During the first thirty-six hours there was some fever and a tendency to stupor, with great prostration. Itching was intense. The condition persisted some five or six days, and gradually subsided, but for several weeks the skin showed a bronze discoloration and desquamated in fine scales.

It seemed clear that the attack was an anaphylactic reaction to

some protein, presumably, of course, from the crab.

No significance was attached to the use, during the preceding week, of very small amounts of orthoform in the cavity left after the extraction of a molar tooth.

Three months later, however, the application of 10 per cent. orthoform ointment to a traumatism of the tongue was followed in a few hours by symptoms identical with those above described, except in lesser degree, as the etiologic relation of the orthoform was at once recognized and the drug withdrawn.

The occurrence of transient papular eruptions after the use of orthoform has been reported, but it is ordinarily regarded as free from toxic dangers, and in some conditions, as cancer and ulcer of the stomach, has been used in large dosage. My personal experience, here reported, indicates, however, that it cannot be used with impunity in all persons, even in very small dosage.

Berkeley National Bank Building.

The Good Doctor Is All of These.—We cannot agree exactly on what a "good doctor" is. Some will say "Practical"; some will say "Scientific"; some will say "Knowledge"; some will say "Heart."—Lyon.

New Instruments and Suggestions

THE INDIA-INK METHOD OF EXAMINATION OF SPIROCHAETA PALLIDA

WILLIAM A. WALTERS, M.D., BILLINGS, MONT.

This method has been described in detail from time to time, and in the majority of cases in which India ink has been used as a means of detecting the *Spirochaeta pallida*, a prepared waterproof India ink has been recommended.

The method usually described is to obtain a specimen from the suspected lesion; a drop of this is placed on a glass slide, an equal amount of prepared India ink is added and the mixture is smeared fairly thin.

It has come to my attention in using this method that the secondary organisms were usually abundant and that the field in every instance showed a striking similarity of these secondary organisms. On comparing the slides of the same case made by the prepared India ink and the field seen with the dark-ground illuminator, it was noted in every instance that many more organisms could be identified with the India ink than with the dark-ground illuminator.

These two apparently dissimilar results obtained on the same patient with the prepared India ink and the dark-ground illuminator caused me to compare the methods carefully.

It was thought that the ink itself might contain these organisms, and working along these lines a drop of prepared India ink was smeared on a clean slide and examined.

It was found that the ink itself contained myriads of organisms, many of them long and filamentous, having a wavy contour not unlike that of the spirochete. There were also many other long rod-like organisms present. An examination of the accompanying photomicrograph will illustrate this point.

A number of other bottles of India ink were examined and almost every bottle contained the same character of infection. It is evident that in the manufacture of this ink the contamination is almost identical in every instance. At least I believe that prepared India ink is unreliable as a means of determining the spirochete.

To obviate these artifacts a dry stick of India ink was obtained and rubbed with a small amount

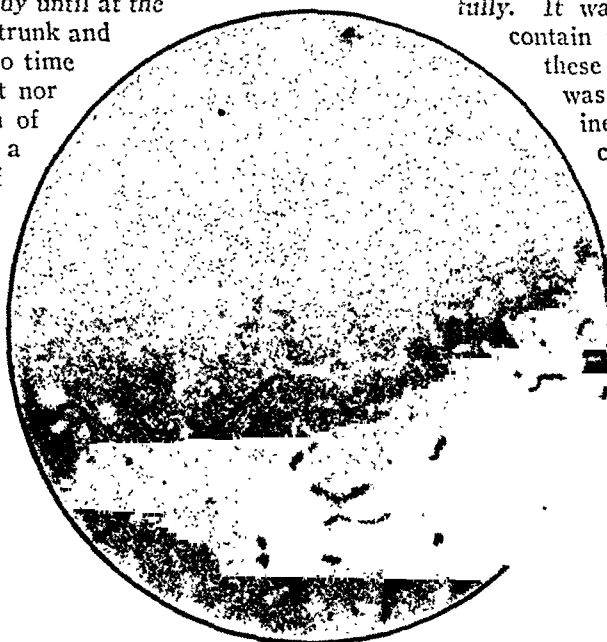
of filtered water. This was spread on a slide and examined and no micro-organisms could be found.

My method is to rub the dry stick of India ink with two or three drops of filtered water in the bottom of a small mortar. The filtered water can be obtained at almost any soda-fountain.

No pestle is used in this operation. The stick itself is simply rubbed against the bottom of the mortar as the pestle would be used in triturating. This India-ink solution is then added to an equal amount of material obtained from the suspected lesion and smeared carefully over the surface of a clean slide. A little practice will enable one to judge the proper thickness of the smear. If it is too thin the organisms are not seen well; this is also the case if the smear is too thick.

Most stationers handle slate ink-slabs which draftsmen use in rubbing up the sticks of India ink. They are very convenient, and they can be procured at a comparatively small cost.

This method, while a little slower and less convenient than with the prepared solutions of India ink, is far more accurate and will obviate all secondary organisms of the microscopic field.



Photomicrograph of a specimen of prepared India ink; Reichert 1/2-inch objective; No. 4 ocular; tube length 160 mm.

SUPRAPUBIC PROSTATECTOMY WITH SPECIAL
REFERENCE TO DRAINAGE

LUCIAN W. SMITH, M.D., LAFAYETTE, IND.

Although suprapubic prostatectomy has increased in popularity in recent years, the problem of satisfactory bladder drainage has remained a discouraging feature. In my own experience this objection has been eliminated by a plan which the accompanying illustration will assist in explaining.

The customary large drainage tube with fenestrated end is secured in the bladder, extending about 1 inch into the viscus and emerging at the upper end of the skin incision. It is important to know the exact length of this tube in order to place properly within it a smaller tube which should reach only to the fenestrae of the drainage tube. This smaller tube acts as a siphon and with certain modifications to be described extends to a receptacle beneath the bed and terminates in a glass tube which is tipped with a rubber bulb from a medicine dropper. A slit in the end of this bulb converts it into a valve which prevents ingress of air with its displacement of water within the tube.

About level with the bed-rail the siphon-tube is thrown into a circular loop having a diameter of about 3 inches, and fastened with adhesive plaster. Immediately above this point the tube is joined by another, leading from a reservoir which is placed somewhat higher than the bed. Water slowly flowing from the reservoir is regulated by a suitable valve and fills the circular loop at brief intervals. Each time the loop is filled to overflowing its contents fill the tube below the loop and start the siphon, which draws from the bladder any fluid that may be within reach, after which the vacuum is relieved by air which finds its way into the drainage-tube. This air is carried along with the fluid, and its passage through the tube, with the sound of its escape through the valve, is a sure indication that everything is working properly. This sound does not annoy, but is a source of satisfaction to the patient who knows that while it continues his bed will remain in a dry condition.

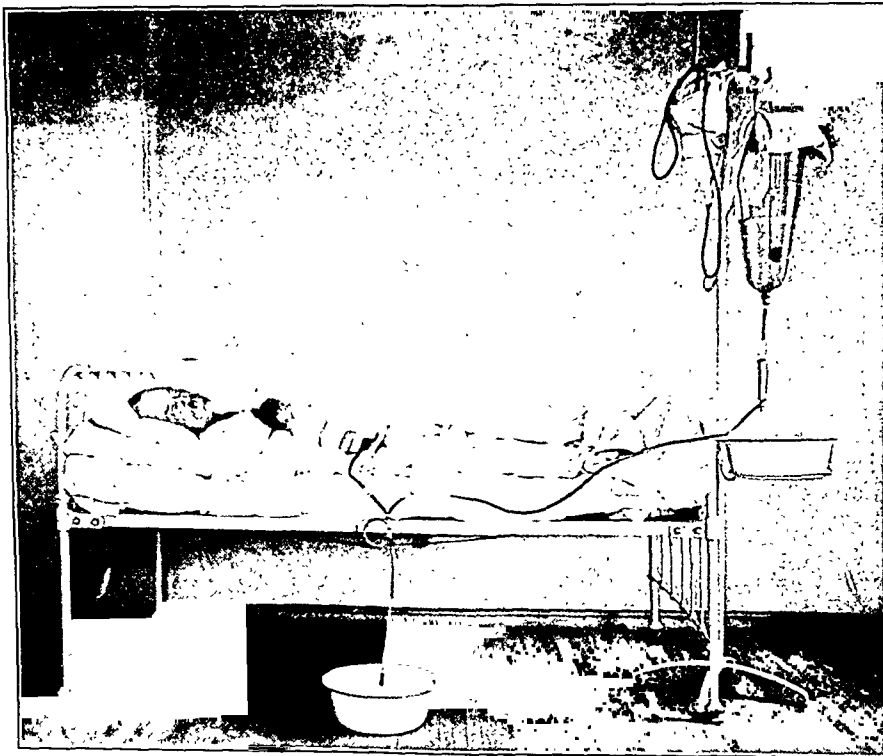
If the tube is obstructed by a clot, the passage of air will cease and the difficulty is at once apparent. A clot may be easily removed by compressing the tube with one hand, then grasping it at a more distant point with the other, so that when the compression is removed a partial vacuum is formed which causes the clot to be held by air pressure in the end of the tube, with which it may be withdrawn. A section of glass in the siphon-tube near the patient's body is valuable for observation purposes. At this point a flask with a double perforated stopper may be connected to catch the urine for analysis.

The bladder may be irrigated through a urethral catheter. By allowing a more rapid flow of water from the reservoir

the siphon works more continuously, and with a little regulation of irrigating fluid, all will be carried away without soiling the bed.

I use two irrigations daily until urine becomes normal, then stop. Continuous hot irrigations are not always efficient in stopping hemorrhage, and for this purpose I prefer a solution of alum of strength varying from 1 per cent. to 5 per cent., followed at once by irrigation with a normal salt solution.

The controlling valve shown in the illustration was made from a discarded ethyl chlorid container having a screw valve. The glass tip and opposite end of the container were removed by the heat of an alcohol flame, and the vent enlarged by means of a small bone drill. A filter is provided by inserting a firm plug of absorbent cotton which prevents obstruction of the valve by sediment, and a perforated stopper with a connecting tube completes the apparatus. Tubing for the siphon should not be over $\frac{1}{4}$ -inch in diameter, as capillary attraction has much to do with the successful working of the siphon.



Author's apparatus for suprapubic drainage in use.

When the large drainage-tube is removed, it may be replaced for a time by a smaller one, and the end of the siphon-tube should be reduced to fit loosely into the smaller tube.

While the bladder wound is healing, after permanent removal of the drainage-tube, a very small tube, wrapped with gauze and inserted part way into the wound, and connected to the siphon-tube, serves to carry off most of the escaping urine during such time as the patient may be confined to his bed.

Soldier's Home Station.

AN ACCURATE MICROCHEMICAL METHOD OF
ESTIMATING SUGAR IN THE BLOOD *

ALBERT A. EPSTEIN, M.D., NEW YORK

The method to be described is an adaptation, on a very small scale, of the one devised by Lewis and Benedict¹ for estimating the sugar-content in the blood. It is based on the fact observed by Dehn and Hartmann,² also by Lewis and Benedict,³ that picric acid and sugar in the presence of an alkali (sodium carbonate) give, on heating, a color reaction which is proportionate to the amount of sugar present.

I have used the method of Lewis and Benedict in about three hundred tests for blood-sugar and found it admirable both in point of simplicity and accuracy.³ It entails, however, the use of 2 c.c. of blood and the employment of costly

* From the Chemical Laboratory, Pathological Department, Mount Sinai Hospital. Work done under the tenure of the Theodor Escherich Fellowship in Pathology.

1. Lewis and Benedict: Proc. Soc. Exper. Biol. and Med., 1914, xi, 57.

2. Dehn and Hartmann: Jour. Am. Chem. Soc., 1914, xxxvi, 403.

3. A solution of picramic acid, suggested by Dr. Stanley R. Benedict, was used as the color standard in most of these tests.

colorimetric apparatus. To overcome these drawbacks and to render the estimation of blood-sugar more suitable for general clinical and laboratory work, I have adopted the Sahli-Gower hemoglobin colorimeter (with suitable color standards) and by that means found it possible to work with small quantities of the necessary reagents, and to estimate with precision the amount of sugar present in 0.2 c.c. or even 0.1 c.c. of blood.

TEST PROCEDURE

The apparatus⁴ shown in the illustration and the following reagents are necessary:

1. Picric acid, saturated solution.
2. Sodium carbonate, 10 per cent. solution.
3. Sodium fluorid or potassium oxalate, 2 per cent. solution.

Put one or two drops of the fluorid or oxalate solution into the graduated test-tube 4 (see illustration). By means of the blood pipet, 3, 0.2 c.c. of blood is obtained from the tip of the finger or the lobe of the ear and is discharged into the tube, 4, containing the fluorid solution. The pipet is rinsed two or three times with distilled water and the washings added to the blood in Tube 4. Distilled water is then added to the 1.0 c.c. mark. After laking of the blood has taken place, picric acid is added to this (a few drops at a time) up to the 2.5 c.c. mark, shaking the tube gently with each addition of the acid. Precipitation of the blood-proteins takes place; the sugar, together with an excess of picric acid sufficient for the reaction, stays in solution. The tube is finally shaken vigorously (covering the end of the tube with the finger) and the contents filtered through a small filter, or, better still, centrifuged for one or two minutes.

One cubic centimeter of the filtrate or the clear supernatant fluid obtained on centrifugalization is withdrawn, put into the boiling tube, 5, and heated carefully over the naked flame. The contents of the tube are boiled until all but 2 or 3 drops of the solution is evaporated. One-half cubic centimeter of the 10 per cent. soda solution is then added and the tube heated again until the contents are concentrated to a small volume equal to about two or three drops. The color of the fluid changes from yellow to deep red or reddish brown and the reaction is completed.

Three or four drops of distilled water are added and the tube warmed gently. The contents are then transferred to the graduated tube, 1. The boiling tube is rinsed several times with water (using only three or four drops at time). The tube is warmed with each rinsing before transferring the contents to the graduated tube. The volume of fluid is then made up to the mark 50 on the scale.

4. The tubes belonging to this hemoglobinometer are not all equally calibrated. With some the 50 per cent. mark represents a volume of 1.0 c.c.; with others, 1.0 c.c. of fluid reaches up to the 43, 45, 46 or 47 per cent. mark. In all of the tubes that I have examined (twenty-four in number) the error in the calibration is below the 10 per cent. mark; the graduations above this mark are usually correct. By means of the standard 1.0 c.c. pipet one can readily determine whether or not a given tube is properly calibrated. In order to facilitate a direct reading of the percentage of sugar on these hemoglobinometer tubes, it is essential to have 1.0 c.c. of fluid stand at mark 50. To overcome a discrepancy (if any exists) in the calibration of a given tube, one may put one, two or three small glass beads in the bottom of the tube, of such size as to raise the meniscus of 1.0 c.c. of fluid up to the 50 per cent. mark.

The color of the resulting solution is compared with that of the two standard tubes, A and B. If it is darker than standard A (representing 0.05 per cent. of sugar) and lighter than standard B (representing 0.1 per cent.), the first standard is used for comparison. In either case the solution in the graduated tube is diluted gradually with water (just as is usually done in hemoglobin estimations) until the colors match.

The percentage of sugar in the blood is then computed thus: Using the lighter standard A the figure on the scale, divided by 1,000 represents the percentage of sugar in the blood. For example, the tube reads 86; then the result is

$$\frac{86}{1000} = 0.086 \text{ per cent.}$$

When Standard B is used for comparison, the figure on the scale is multiplied by 2 and divided by 1,000. For example, the tube reads 73; then the percentage of sugar is

$$\frac{73 \times 2}{1000} = 0.146 \text{ per cent.}$$

With the instructions given, the above formulas may be used for direct computation of the percentage of sugar only, when 0.2 c.c. of blood is used in the determination. When,

however, only 0.1 c.c. of blood is used, the formulas apply as well, but the value obtained must be multiplied by 2.

In developing this method I at first used three standard tubes representing 0.05 per cent., 1.10 per cent., and 0.20 per cent., respectively, so as to meet all likely percentages of sugar in the blood. The use of the last of these I found inadvisable inasmuch as the color which it represents is too concentrated, and accurate readings with it are almost impossible. It is better, in cases in which a high sugar content in the blood is suspected (in diabetes for example) to use only 0.1 c.c. of blood for the determination. In all other cases 0.2 c.c. of blood should be used.

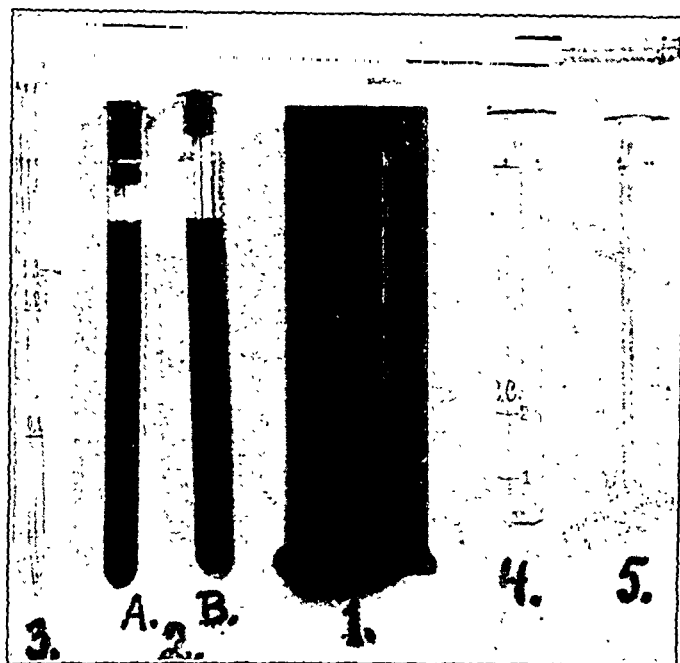
The advantages of the method are obvious and require no discussion. It needs only seven to ten minutes to complete a determination of sugar. The small quantity of blood necessary for the test renders it suitable for general clinical work on children as well as adults, and does away

with venipuncture. The colorimeter readings are easy and yield reliable results.⁵

995 Madison Avenue.

5. The special apparatus devised for this method was made for me by Eimer and Amend, New York.

Hospitals and Education.—It is the privilege and duty of hospitals to extend their field of usefulness by opening their wards more freely to undergraduates in medicine, to elevate the standards of work done by nurses, internes, residents and attending staff, to foster research. By so doing they are not harming the patients, but are rather insuring them better and more skilful treatment. They are serving to enlighten and educate not only the individual, but the observing public as well, eager to learn and to be instructed in knowledge of medical matters.—Herrick.

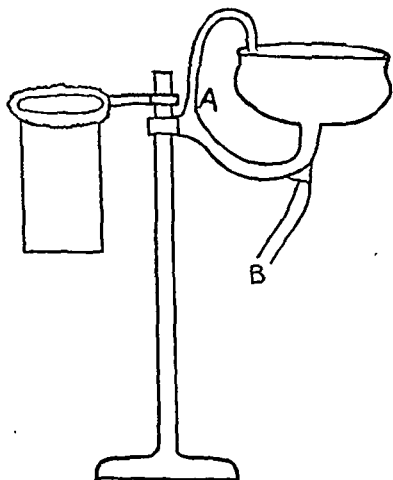


Apparatus for estimating sugar in the blood by microchemical method. 1. Sahli-Gower hemoglobinometer stand and graduated tube. 2. Two standard color tubes, one (A) suitable for measuring quantities of sugar in the blood ranging from 0.05 per cent. to 0.1 per cent.; the other (B) is adapted to quantities of sugar over 0.1 per cent.; 3. A special pipet (resembling but larger than the hemoglobin blood-pipet) graduated at 0.1 c.c. and 0.2 for collecting and measuring the blood. 4. A test tube (1/2 by 4 inches) graduated at 1.0 c.c. and 2.5 c.c. 5. Another test tube of similar dimensions (not graduated) suitable for boiling.

A SANITARY WASTE COTTON RECEPTACLE

WILFRID HAUGHEY, A. M., M.D., BATTLE CREEK, MICH.

The problem of a sanitary receptacle for waste cotton for ear, nose and throat treatments has been a puzzle. Most of the receptacles on the market have to be cleaned out and are in an awkward position. I have taken an iron ring clamp from an ordinary laboratory ring stand and clamped it to the standard of my fountain cuspidor. I then place a manila paper sack, like those grocers use for sugar, etc., in this



Paper-bag receptacle for waste-cotton. A, water, B, waste.

ring with the open end projecting about $\frac{1}{2}$ inch above the ring and crushed over it. Waste cotton is simply thrown into this sack. As often as need be the bag is taken out, the open end twisted shut and it is ready for disposal, a new clean sack being placed in the ring. There is nothing that has to be cleaned, and after once taking the cotton from the applicator it does not have to be touched again.

This apparatus is handy to the surgeon, inexpensive to instal, and the up-keep is practically nothing. Five hundred sacks cost only about forty-five cents.

24 West Main Street.

AN EXERCISE AND A NEW METHOD OF SELF-MASSAGE USEFUL IN THE TREATMENT OF CHRONIC CONSTIPATION

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Second Assistant Visiting Physician for Diseases of the Nervous System, Boston City Hospital

It is not greatly to the discredit of physicians that chronic constipation is usually treated by medicine alone, or by medicine and diet, and rarely by medicine, diet and mechanical therapy. The physician is not wholly to blame. His experience has taught him that while nearly all patients will faith-

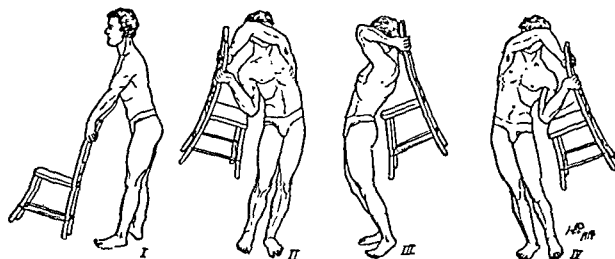


Fig. 1.—An exercise for all of the muscles of the trunk not requiring special apparatus.

fully take medicine and some will submit to a restricted diet, only the exceptional individual will or can faithfully take exercises. Want of time or facilities and the aversion to muscular effort which grows on those of sedentary habit are some of the reasons for this.

The exercises to be described require little time and involve no expense, as they were devised primarily for patients in a free clinic. To overcome a persistent aversion to exercise there is no other way save to interest the patient in sports.

Golf and tennis are the sugar-coated pills, or the enticing elixirs of mechanical therapy. Specific exercises are its bitter tonics.

In the treatment of constipation with atonia and low position of the stomach and colon, all exercises calling into action the muscles of the trunk, which are the only ones of much importance to health, are indicated. The value of walking is much exaggerated by those who write on health matters for lay consumption. Going over rough and hilly ground is good, but walking on a level way, which consists merely in the repetition of the restricted movement of placing one foot before the other, does not meet the indications. The familiar exercise of lying on the back and flexing the thighs with legs extended develops the recti, but probably not the oblique muscles, which are of equal importance.

The chair exercise here illustrated (Fig. 1) exerts equally all of the muscles of the trunk. It strengthens the abdominal muscles, whose support is necessary to maintain the viscera in their normal position, and in addition to this it develops the elevators of the ribs, thus removing the abnormal downward pressure which is produced by a contracted thorax. It is performed as follows:

The back of the chair is loosely grasped with the thumbs forward. The left elbow is raised above the head. The left hand is carried forward and to the right and then backward and to the left, and as the chair is rotated the right hand follows the left, the chair being carried behind the body, then to the left and again in front. After circling a number of times from left to right, the movement should be reversed. One should not stand erect and swing the chair in the way that might be considered good form in a gymnasium, but on the contrary, should allow the chair to hang nearly perpendicular, moving the chair as little as possible and bending the body as far forward, as far from side to side and as far backward as possible.



Fig. 2.—Massage of the colon with wooden dumb-bells.

To neglect to employ massage, when it is available, in cases having a flabby and pendulous abdomen, is an omission that cannot be condoned. Every physician should be competent to give massage and willing to do it when time permits. Probably nothing is as effective as abdominal massage by the hands of a skilful operator, but a very good substitute is self-massage with wooden dumb-bells, which I suppose to be a new method. The half-pound wooden dumb-bell is of the proper size for this purpose. The patient lies on his back with legs and thighs partially flexed (Fig. 2) in order to relax the abdominal muscles. As it may be difficult to maintain this relaxation during the massage, the necessity of doing so must be emphasized. Beginning at the cecum and following the course of the colon the abdomen is kneaded with the dumb-bells, which are not held by the handle but by the head which is away from the body. There is to be no pounding but merely deep pressure. This cannot be done with the hands alone, because in that way only light pressure can be exerted. The hand grasping the head of the dumb-bell 8 inches from the body, however, can produce as much pressure as may be desired. It is superior to the cannon-ball massage devised by Sahli, because there is a to-and-fro motion resembling what is done by a masseur. After massaging the course of the colon a few times while lying on the back, the patient turns and lies on the left side and again massages while in this position. This cannot be done at all with the cannon balls. It is a useful procedure because in this posture gravitation assists in the passage of the feces through the transverse colon and the flexures. As the position of the colon varies with the individual and from time to time in the same individual, the massage is not always accurately applied,

but when the body is horizontal this variation is probably never great enough to render the massage ineffective.

Neither the exercise nor massage should be performed while the stomach is full. When gastric stasis, without pyloric obstruction, is present, it may sometimes be relieved by lying on the right side either with or without massaging the stomach.

68 Davis Avenue.

A NEW METHOD FOR FOLLOWING FISTULAS

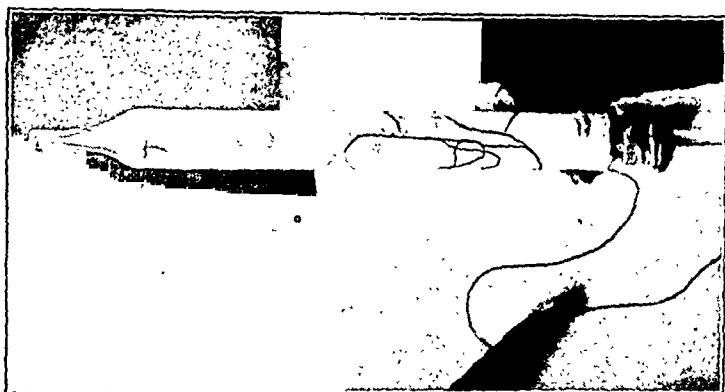
W. L. BROWN, M.D., AND C. P. BROWN, M.D.,
EL PASO, TEXAS

1. Through an ordinary glass syringe of from 6 to 8 dram capacity a piston is run after it has been oiled with petrolatum to leave the interior of the syringe so that silk thread will stick to it.

2. With a long slim pair of forceps a spool of black silk thread secured from a dry goods store is placed within the interior of the syringe in as near a spiral as possible, the lower end being left close to the outlet of the syringe, and thread several inches long outside of the syringe at the proximal end.

3. The syringe is filled with well-warmed bismuth paste and the fistula injected, the tip of the syringe fitting the external opening of the fistula snugly. The bismuth carries the thread anywhere it is possible for it to go.

CASE 1.—An abdominal fistula of the cecum following tuberculous appendicitis, only of sufficient size for gas to



Syringe filled and ready for use.

escape, rarely any fecal matter, had been operated on unsuccessfully once because the small opening in the bowel could not be located. It was injected with bismuth paste and silk thread thirty-six hours before the second operation. The thread led down around the outside of the cecum into its posterior wall through a very small opening; at the time of operation the thread had gone into the bowel and could not be extracted. After the opening had been isolated and ready for closure, the thread was cut flush and left.

CASE 2.—In a case of multiple perineal fistulas originating from ischio-rectal abscess, one opening to the right side of the anus, one to the anterior side, and one opening high up under the perineum at the base of the scrotum, the fistulas were injected, and it was found that the small opening at the right side of the rectum had direct communication with the opening high up in the perineum. The thread guide gives perfect control of the situation at operation.

In many rectal fistulas the injection can be made at the time of operation, the thread frequently returning from the rectum, or it can be found and fished out with the finger if it is not desirable to make the injection the day before.

It is a great relief in undertaking these operations to feel that one has a perfect and easy method of following the fistula throughout its entirety.

The Wise.—The most manifest sign of wisdom is continued cheerfulness.—Montaigne.

Therapeutics

PREVENTION IS GREATER THAN CURE

(Continued from page 1579)

VII

EFFECT OF SEASONS ON HEALTH

A positive indication of the effect of this factor on public health can be obtained by the death-rate in the registration areas for the different months of the year. Many studies of these statistics have been made, and it seems to be a fact that the greatest mortality usually occurs in the month of March, although sometimes January surpasses March in mortality, and February follows closely. In July and August, also, the death-rate is somewhat higher than in the immediately preceding and succeeding months, while the minimum death-rate generally occurs in June, and November is usually the month of next lowest mortality. These statistical facts are not surprising, as it has long been recognized that the highest mortality occurs in the months characterized by extremes of temperature, the hot weather of July and August causing a large mortality among children, while the cold weather of January and February causes a high death-rate from diseases of the respiratory system. Many old people and many feeble persons who may have combated and survived the severity of January and February are quite likely to succumb in March. Also the relaxation of a little warmer weather causing more or less carelessness among the well makes March the month of the greatest number of deaths.

Besides the morbidity and mortality associated with these extremes of temperature of summer and winter, various other factors must be taken into account. Such are local climatic conditions, as peculiarly unhealthy weather may prevail in a region, at any season, and cause the death-rate to be abnormal for that season. Persistent and recurrent rain or snow, dark days, or excessive humidity may so depress individuals that they become more susceptible to disease; and the ill do not so readily recover as when the weather is pleasant. Epidemics of various kinds may, of course, also increase the death-rate at any season.

While it is the sick, the weak, the old, and the very young who are especially likely to suffer from excessive heat or severe cold, even the strong and the robust are affected by climatic severities, and a larger proportion of the well become ill, especially with the intense heat of summer.

To prevent illness in hot summer weather, persons should not unnecessarily expose themselves to the rays of the sun, and should especially avoid severe exercise in the heat when it is not necessary. This is a special warning for those who take hard exercise, in vacation recreations or amusements, in the sun in the middle of the day. Such persons, also, are often not used to such exposures, their work being mostly indoors.

The air in cities is likely to be more dust-laden and more impure in hot weather than in cold weather, as however well the streets are watered, the dust on houses and buildings and in crevices more readily dries sufficiently to be wafted by the least breeze. Also decomposition of all animal matters occurs more rapidly and more readily contaminates the air. Consequently, because of the heat and this air impurity,

all those who are able leave the city and seek the seashore or the country. Such changes of location are not always a panacea, as, if such individuals are compelled to lose all their home comforts, if they must sleep in small, ill-ventilated rooms and in crowded quarters, if they are pestered with mosquitoes and their food is covered with flies, as obtains in so many summer boarding houses, and if the sea-food presented is not immediately from the water or properly refrigerated, the harm done is greater than the good. Many things should be considered by the individual or the family and by the family's physician before the summer abode is changed. This is not to minimize the great advantage of vacations and of fresh, clean, seashore and country air, provided other dangers are not incurred. Also, the danger of overdoing seashore bathing must not be forgotten.

For the many individuals or families who cannot leave their homes, or to whom it seems unwise to do so, the summer may be rendered more comfortable by properly screening the windows and doors from flies and mosquitoes and still allowing free circulation of air, screening of verandas or balconies, if such is advisable, resting as much as possible during the interim from labors, and not taking severe and uncomfortable trips or amusements to add to the exhaustion caused by the work that must be done. Many persons come back from excursions or trips, after buffeting with the crowds, more exhausted than when they left. The trolley trip should be selected that gives the greatest amount of fresh air with the least amount of crowding and exertion. Cool bathing should be advised and urged as a most splendid method of lowering the temperature, cleansing the skin from perspiration and causing it to become more active and thus lowering the internal temperature. Of course excess of such bathing should be avoided.

Before leaving this subject of summer heat, let it be urged once more that over-eating, late hours, and strenuousness in vacation and summer amusements should be abolished, and that the prime thing is restfulness in the coolest, cleanest air that can be obtained.

Men are not careful enough to wear thin clothing and protective, air-cooled hats. In this era nothing need be said of the air-cooled clothing of the women for summer. Certainly from a physiologic and sanitary, if not a moral point of view, their clothing seems unassailable.

As to the opposite climatic extreme, namely, the severe cold of winter, it is equally important that the strong as well as the weak should not subject themselves to needless exposure. The strong are likely to boast that they do not need overcoats or other means of protecting themselves from the cold. Many such individuals fall by the wayside, needlessly. The under-clothing should be that found best for the individual; whether linen mesh, silk (if one can afford it) or thin woolen, is a matter for individualization, modified by the region in which one lives, and the work which one does. Whether an individual wears overcoats or sweaters is a personal decision, but the wearing of sweaters all day, at work or in buildings, is a serious mistake, which is made frequently by young men. The feet should be warm, the kind of shoe depending on the weather. High shoes should be worn in cold weather and rubbers when it is wet, unless the shoes are water-proof. If a child wears rubber boots for storm and play, in wet and snowy weather, he should not be allowed to sit with them on in school. Rubber

heels are always good; rubber soles are a serious mistake, especially in summer, and for one to be insulated with these heavy rubber-bottom shoes for hours, or all day, is an abomination. Such rubber insulation causes the feet to perspire, and causes a lack of tone of the feet.

The costume and clothing of men in winter does not require a great deal of discussion. The clothing of women and girls, projected from the summer into the winter, is a proposition that it is practically hopeless and needless to discuss. They wear furs draped around them almost anywhere; the warmth of the rest of their costume is indeterminable. We venture to state that the physician of to-day rarely feels more helpless than when one of these girls comes to his office with a severe cold and cough. He knows that it is more care and common sense that cures a cold than drugs, and without the two former elements in the cure he is forced to rely on drugs in which he has but little faith. Any common-sense advice that he will give such a girl will either place him in disfavor, or will be received and not acted on. It might be parenthetically stated that what is said above also generally applies to the girl's mother.

The clothing of young children in cold weather is more often incorrect than correct. Many are over-clothed; many are under-clothed. The family physician should carefully advise in this important matter.

Those who habitually live or work in warm rooms should be careful to wear clothing of moderate weight so as not to be overheated while in the house, but they must put on overcoats or cloaks on going out. In the northern and eastern parts of the United States people are very likely to have their houses overheated in winter. A temperature ranging from 68 to 72 F. with an adequate amount of fresh air is the temperature that is the most healthful. Old people and very young children require and must have greater heat than this in winter. The best heating system for houses and buildings need not here be discussed.

Individuals who can afford it, and who are weak and feel the cold severely, or who suffer more or less from bronchitis, colds, or other disturbances due to cold weather, should go to a warmer region during the winter. If they go to the southern United States, however, they must go far enough south to get the warmth, and not into the middle south where it is not very warm, and where the houses are not as well heated as their own homes. They should go at least below South Carolina in the East, and in the West, to Southern California, Arizona, or New Mexico. Many people who can afford this climatic luxury return to their homes too early in the spring, and are more likely to acquire severe colds, and even pneumonia, than though they had remained at home all winter. Also, it must not be considered that these regions are exempt from the possibility of severe chilling and from pneumonia. Many an individual has gone to a warmer climate and acquired pneumonia, and died of it.

(To be continued)

Hygiene and Society.—Every citizen should be inspired with love of personal and public hygiene, as were the Greeks. Every physician should be deeply grounded in physiologic medicine and provided with proper facilities for using it practically. Every public health officer should know thoroughly the contributions of etiologic medicine. All efforts should be made to promote these fundamental needs of society.—Bardeen.

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SATURDAY, NOVEMBER 7, 1914

VENTILATION

In the light of more modern studies in ventilation it would seem that the real explanation of the ill effects of bad ventilation is not to be found in the chemical composition of the atmosphere breathed. One is constrained to ask wherein the disagreeable or detrimental influences of poorly ventilated spaces lie. The various phases of this vital and timely, though not new subject were discussed some time ago by qualified experts in a symposium on ventilation at the Chemists' Club in New York City.¹ There is unanimity among them regarding the possible significance of the chemical vitiation of the air. Pure air contains nearly 21 per cent. of oxygen. This may be reduced to 17 per cent., a proportion too small even to support ordinary combustion, before its diminution becomes harmful. Except in extreme conditions the amount of oxygen in the closest halls crowded with people practically never falls below 20 per cent. Oxygen will, therefore, take care of itself and may probably be wholly left out of consideration in ventilating systems. Indeed, Henderson² has reminded us that it is necessary to go only a short distance up into the mountains to come under an atmospheric pressure such as to reduce the oxygen supply much more than it is reduced in crowded assemblies, and yet mountain air is especially healthful. The amount of oxygen in the air apparently has little or nothing to do with the stimulating or depressing properties of the atmosphere breathed in ordinary life.

The air, under the usual conditions, contains about 4 parts of carbon dioxid per ten thousand parts (0.04 per cent.) and the "standard" of desired purity for the air of dwellings was long placed as low as 6 parts per ten thousand. Experimentation indicates, however, that it does not become harmful to man until the carbon dioxid accumulates to above 1 per cent., or nearly

forty times its usual amount. The air in crowded rooms very rarely reaches 0.4 per cent., so that evidently a quantity of carbon dioxid far exceeding the highest hygienic limit which has hitherto been set up as a "standard" can be breathed with impunity. Certain it is that the poisonous properties of this waste product of combustion have been greatly overestimated when the physiologic limits have been placed in terms of parts per ten thousand; though we may hesitate to accept the much higher concentrations of carbon dioxid at which a few individuals have lived in comfort under conditions of experiment, as a safe guide for formulating rules which shall apply to all persons and over long periods. Lee has exhibited the mental attitude which ought always to characterize men of science by admitting that notwithstanding these recent changes in our ideas of the relation of oxygen and carbon dioxid to ventilation, he is not prepared to say without reservation that the continued exposure of an individual day after day and week after week to even a moderately diminished quantity of oxygen and a moderately increased quantity of carbon dioxid would be wholly without harm. The hygienist is led to this reservation not by any existing physiologic knowledge, but rather by the necessity of maintaining an open mind receptive to future possible discoveries.

The long-debated idea that expired air contains organic matter which is toxic has been abandoned by most physiologists. The odor which permeates a crowded room and the putrescible character of the fluid which can be condensed from the atmosphere under such conditions leave no doubt of the presence of foreign substance of some sort attributable to the presence of man. There is no tenable evidence, however, that this comes from the lungs and is incident to respiration itself. The organic matter is probably derived from decomposition of food particles in the mouth. The well-known contention of Rosenau and Amoss³ in 1911, suggesting the presence of a peculiar organic and volatile constituent, probably of a protein nature, which is toxic to human beings and other animals has not been supported by the independent researches of Weisman and of Lucas. It seems likely that the odor of air vitiated by human beings is no index of the presence of specifically harmful ingredients. It has been stated also that the bacteria in the air need not be considered in relation to the problem of ventilation, since the comparative unimportance of the air as a vehicle of infection is becoming widely recognized.⁴ The assumed desirability of washing the air free of dust is thus put in a new light.

In contrast with all the foregoing negative factors with respect to the causes of discomfort or ill health

1. The addresses are printed in full in the Jour. Indust. and Engin. Chem., 1914, vi, 245 fig., as follows: Lee, F. S.: Physiological Problems of Ventilation, p. 245; Kimball, D. D.: Mechanical Problems of Ventilation, p. 248; Baskerville, C.: Investigation of School Air in New York City, p. 250; Winslow, C. E. A.: The New York Commission on Ventilation and Its Problems, p. 255.

2. Henderson, Y.: The Unknown Factors in the Ill Effects of Bad Ventilation, Tr. XV. Internat. Cong. Hyg. and Demography, Washington, 1913, ii, Part 2, p. 622.

3. Rosenau, M. J., and Amoss, H. L.: Jour. Med. Research, 1911, xxv, 35. The Physiologic Properties of Expired Air, editorial, THE JOURNAL A. M. A., March 9, 1912, p. 702.

4. Chapin, Charles V.: The Air as a Vehicle of Infection, THE JOURNAL A. M. A., Feb. 7, 1914, p. 423.

hitherto associated with inadequate ventilation, we may now conclude with reasonable certainty that the symptoms of discomfort in a badly ventilated place are due to the physical condition of the air in respect to temperature, humidity and movement, and not to any chemical properties whatever. Flügge long ago alleged that the familiar symptoms noted in closed, crowded rooms — restlessness, headache, dizziness, nausea, etc. — are to be attributed solely to heat retention. There are investigators who, while admitting the essential facts that the malaise of bad ventilation depends on interference with heat elimination by the skin and is due wholly or in part to heat stagnation in the atmosphere contained in the pores of clothing surrounding the body, find the explanation here advanced unsatisfactory.³ Nevertheless, overheating is the chief evil to be guarded against in ventilation at present.

Most persons realize that in our American cities the chief danger of our torrid summer days is not the heat alone, but the combined heat and humidity; few appreciate that it is precisely the same factors which are responsible at all seasons for the evil effects of the confined air of rooms. There is no doubt that the air of our American living-rooms and many schoolrooms and other assembly chambers is kept too warm. No fixed standard percentage of humidity can be set, since the content of aqueous vapor in the air is so closely related to temperature. As Lee remarks, if any single standard is to be chosen as the standard of healthful air, it is probably the temperature of the air as indicated by the wet-bulb thermometer, which is a measure of heat and humidity combined. The effect of clothing appears to be disregarded by nearly all who discuss these problems; indeed, the hygiene of clothing remains to be written. According to Haldane, body temperature begins to rise in fairly still air, even in persons stripped to the waist and doing no work, when the wet-bulb temperature exceeds 31 C. (88 F.); when moderately hard muscular work is done, the rise may begin at 26.7 C. (80 F.). When ordinary clothes are worn, serious rise of temperature in still air may begin at much lower wet-bulb temperatures. Soldiers marching in uniform, for instance, are liable to heat-stroke at wet-bulb temperatures of under 21 C. (70 F.).

Much criticism has been aimed in the past at the apparent inadequacy of various "systems" of ventilation. An expert present at the New York symposium⁶ insisted that there were no mechanical problems unsolved in the field of ventilation; that is to say, the engineer can provide any chemical or physical condition of the atmosphere of a closed space which may be required. What is needed, primarily, is some agreement among physiologists and medical men as to the desiderata in respect to the air in which we must live and work. The engineer may then be counted on to

provide the conditions, whether they concern oxygen, carbon dioxide, the once vaunted ozone,⁶ temperature, humidity, air-movements, dust or bacteria. Many existing ventilating plants yield unsatisfactory results for reasons which are not related to shortcomings of the ventilating engineer. Until recently he has been told by the hygienist that the prime object of ventilation was to remove noxious gases rather than to regulate air-temperature and humidity; and, furthermore, he has rarely been able to count on an intelligent and conscientious operation of his plants after they have been built.

Professor Winslow has well summarized the importance of the subject under discussion by reminding us that there are three factors and only three which universally affect the life-processes of living beings. These are the physical and chemical conditions of the enveloping medium, food-supply, and predacious or parasitic enemies. The first of these factors, in the case of man, is solely a question of air-conditioning or ventilation. When the ideal air-conditions and practical methods of securing them have been worked out with reasonable completeness an incalculable gain in the health and efficiency of man will have been effected.

One cannot read the interesting contributions presented by Winslow, Miller, Lee, Bass, Ohmes, and Van Der Bent in the current number of *THE JOURNAL*⁷ without realizing that further investigations of the conditions *actually* existing in the midst of what is assumed to be inadequate ventilation are called for. As one of the writers has remarked, the extraordinary thing about the shifting practices in the ventilation of public buildings is that sweeping conclusions and far-reaching changes in policy have been arrived at without any detailed or systematic study such as seems essential in order to establish a safe basis for action.

A GOVERNMENT REPORT ON THE FRIEDMANN TREATMENT

In recent years there has probably been no announcement in medical literature which attracted a more wide-spread attention in this country than did the announcement of the Friedmann treatment for tuberculosis. This was due to skilful handling of the publicity work in the daily press. The sensational newspaper reports of alleged improvement and cure of cases of tuberculosis following the use of the treatment, the reports of persons of high position in public life, of lay workers in tuberculosis, and even a few physicians who became enthusiastic supporters of Friedmann will be recalled by every one. When a

6. See editorials, *THE JOURNAL A. M. A.*, Ozone Myths, Feb. 10, 1912, p. 412; The Truth About Ozone, Sept. 27, 1913, p. 1045; Temperature and Humidity in Hospitals, Oct. 25, 1913, p. 1541; The Ventilation Problem, Nov. 22, 1913, p. 1902.

7. Symposium on Air Problems in Hospitals, *THE JOURNAL A. M. A.*, this issue, pp. 1620-1635.

5. Kimball, D. D.: *Jour. Indust. and Engin. Chem.*, 1914, vi, 248.

note of warning was sounded by THE JOURNAL and others the assertion was made that Friedmann was being hindered in his great work. The fact is otherwise.

Immediately on the arrival of Dr. Friedmann in this country, the United States Public Health Service took up an investigation of the validity of the claims for the treatment. A board was appointed consisting of Surgeon John F. Anderson, the director of the Hygienic Laboratory, and Surgeon A. M. Stimson, to make a thorough study of the results of the use of the treatment. The report of this board¹ has just appeared and its findings are a complete refutation of Friedmann's claims, not only for having developed a specific cure for tuberculosis, but also for the harmlessness of his treatment for man and animals. The board had an opportunity to observe the effect of the treatment in ninety-four cases of tuberculosis and was prepared to furnish many more for treatment and observation, but owing to Dr. Friedmann's delay, dilatoriness and unprofessional conduct it was obliged to limit observations to the ninety-four cases.

The claims made for the treatment were, briefly, that by means of injections of a living acid-fast organism, harmless of itself, it was possible to cure cases of tuberculosis which had not advanced to that stage where death was imminent. From the way in which the claims were put forth and from the fact that successes only and not failures were reported in the public press, the reader of Friedmann's claims could assume that such results only were the rule. In other words it was claimed that a sovereign remedy for tuberculosis had been discovered and that a method had been devised whereby living acid-fast organisms could be administered without abscess formation.

Investigation did not confirm the claims. On the contrary, it was found that the preparation used was not devoid of dangerous properties of itself, and still less so when injected into persons with tuberculosis. A favorable action on tuberculous processes by the treatment was certainly not the rule, and if the improvement noted in a few cases was to be ascribed to the treatment, we are equally bound to attribute to it the serious retrogression observed in other cases. Abscess formation had not been avoided, as abscesses occurred in a number of cases.

The board made extensive studies of the organism used in the preparation of the vaccine, both by cultural methods and by animal inoculation. It was found that the injection of the organism in animals causes abscess formation in over 25 per cent. of the animals treated. Animals treated with the organism—rabbits and guinea-pigs—either before or subsequent to infection with virulent tubercle bacilli, devel-

oped as a rule an increased susceptibility to tuberculosis. The treatment did not show either curative or protective properties in monkeys against tuberculosis.

The observations of the board on the methods of injection and dosage employed by Friedmann offer an interesting side-light on his methods. It was found that the technic employed by Friedmann was in general adequate but not scrupulous, although some glaring exceptions were accidentally observed. Two bottles of the material for injection were at hand, one to be used for intravenous injections and the other for intramuscular. Cultures made by the board, on three occasions, from these bottles, showed a contamination in two instances. On at least one occasion the board observed that the bottles became unwittingly confused, without, however, causing any unusual symptoms in the patient.

It is a matter for congratulation that this painstaking report from the Public Health Service has appeared; it is a pity that it could not have been given publicity at the time when consumptives were being so widely exploited; but scientific work of the kind done by the Public Health Service in this instance obviously requires a long period of time. It is a report that shows the absolutely flimsy evidence on which the Friedmann method for the treatment of tuberculosis was based. Of course this report is merely what might have been expected. It is confirmatory of other reports that are now in the possession of THE JOURNAL from widely separated points. The evidence which THE JOURNAL has accumulated and which includes reports on the poor victims that relied on the Friedmann treatment—together with the death notices of scores of victims—shows that the commercialization of the Friedmann cure was a grisly hoax on the unfortunate but ever hopeful consumptive.

FLIES AS CARRIERS OF DISEASE

The part that insects, and especially the two-winged insects or *Diptera*, play in the transmission of disease, has given a profound impulse to the study of the methods and mechanisms by which the micro-organisms are conveyed from one diseased subject to another. More has been done in the study of disease-carrying insects, their habits and intimate anatomy, during the past twenty years, than in all the years preceding. The agency of mosquitoes in yellow fever and malaria, and the possible relations of the black-fly to pellagra, of the moth-fly, *Phlebotomus*, to verruga, of the stable-fly to infantile paralysis, of the tsetse flies to sleeping sickness and various diseases of the domestic animals are among the most astonishing and far-reaching discoveries of biologic and medical science of the past quarter of a century.

Of all the groups of blood-sucking flies that molest man only the minute *Ceratopogon* midges or punkies

1. Anderson, John F., and Stimson, Arthur M.: The Friedmann Treatment for Tuberculosis: A Report of the Board Appointed for Its Investigation, Hyg. Lab. Bull. 99, 1914; abstr., THE JOURNAL A. M. A., this issue, p. 1690.

have so far not been accused of criminality. And it may be confidently believed that ere long even these little pests will be arraigned for high misdemeanors. Fortunately the blood-sucking horse-flies, the only other two-winged flies that have piercing proboscides, do not often molest man, but that will not absolve them from all suspicion.

¹⁰ Of the blood-sucking *Muscidae*, the common stable-fly, the horn-fly and the various tsetse flies of the Far East are the only ones that have achieved much popular notoriety; the first has been accused, probably rightfully, as the conveyer of the minute germs of infantile paralysis; the last have been known for the past fifty years to be the cause of various diseases of domestic animals in Africa, and more recently of the sleeping sickness in man. One wonders that the relations between cause and effect that have been known for so long had not led earlier to the discovery of the trypanosomes; but the student of "bugs" was then looked on by the generality of men in a sort of contempt.

In a recent memoir, Cragg¹ gives a technical description of the mechanism of the blood-sucking apparatus of these muscid flies and a number of their newly discovered relatives in India which will appeal only to the specialist, for the greater part. But some of the author's conclusions are of wider interest. He shows, very satisfactorily, that the flagellates found in the alimentary canal of the blood-sucking muscids and allied non-blood-sucking forms did not come originally from the blood of vertebrates; the facts simply point to a common origin of the two types. The author seems unquestionably right in maintaining the view that blood-sucking habits are a specialization in these, as in all other blood-sucking flies; but he seems slightly hazy in his geologic reasons. At no time since flies have been in existence, for they are a comparatively late evolution among insects, has the world been more covered with water than at the present time. Tsetse flies are very old inhabitants of the earth. Specimens of them have been found in the Tertiary rocks of Colorado, and it has been stated by an experienced observer that they have been correctly identified. Tsetse flies lived in North America at least half a million years ago, and how long it took for them to migrate here from Asia, which probably was their original home, no one can say. It is not at all improbable, according to Cragg, that the original ancestors of all the species of *Glossina* lived a million years ago, and that the common parents of tsetses and the other muscids which breed the allied flagellates lived half a million years earlier still. Lots of things could happen in a million years. Kellogg of California has recently reached the interesting conclusion that the allied species of *Pediculus* that infest the hair of the

uncleanly and that of the simian apes had common ancestors in the parasites of the common ancestors of man and the same simian apes, at least as long ago as Miocene times, say not less than half a million years ago. That is nothing very strange either, for recent research goes to show that many allied birds and mammals have allied parasites which have descended from their common ancestors parasitic on the common ancestors of their hosts.

All of this goes to show that the blood-sucking habits of flies are exceedingly old ones, to speak in non-geologic terms. Another conclusion of Cragg of immediate economic interest to the physician is that "the evolution of blood-sucking habits can be seen at the present time in those flies which are blood-suckers, but which have no biting mouth-parts," but which "depend on true biting flies for the making of the wound"—a sort of commensal parasites. His own observations as well as those of other students seem to prove his contestation.

It is needless to say that these results are important, because such flies, while having no biting mouth-parts, may easily be agencies for the transfer of micro-organisms from the sick to the well. Cragg also shows from the structure of the mouth-parts why the *Glossina* flies, unlike the stable-flies, for instance, stand upright in the act of thrusting the proboscis into the skin of animals.

IODIN AND THE THYROID SECRETION

That the thyroid gland elaborates some sort of "internal secretion," which finds its way through some channel or other into the general circulation and is thereupon distributed in the organism, is to-day tacitly assumed. There is, of course, considerable indirect evidence of such a thyroid function; but the detection of the actual product of glandular activity in the blood or lymph has not been attended with success. How important it would be for the understanding of numerous as yet unsolved thyroid problems if the secretion product could actually be traced in the body, scarcely needs to be pointed out.

The interrelation of iodine and the thyroid glands has centered attention on the possibility that the glandular product is an iodine-containing substance. Small amounts of iodine are common constituents of the glands, which respond to the introduction of iodine into the organism by retaining a portion in their tissue. The element is not merely present in some readily soluble inorganic form such as the iodides, in the guise of which it is commonly administered. The greater part of the iodine of the thyroidal tissue exists in fixed organic combination, presumably with proteins.¹ The iodized protein of the thyroid does not exhibit a con-

1. Cragg, F. W.: The Comparative Anatomy of the Proboscis in the Blood-Sucking Muscidae, Scientific Memoirs of the Medical and Sanitary Departments of the Government of India, Calcutta, 1913.

1. Compare Blum, F., and Grützner, R.: Studien zur Physiologie der Schilddrüse. IV. Mitteilung. Schicksal des Jods in der Schilddrüse, Ztschr. f. physiol. Chem., 1914, xci, 400.

stant content of iodine, but one that is quite variable and is increased after iodine administration.

Is the thyroid hormone or secretory product—if such there be—really an iodized substance? There have been assertions that this is the case,² although there is no lack of negative evidence in the literature on the subject. The fact, for example, that in the absence of any iodine intake the thyroid still maintains its content of the element, in other words, that the iodized substance does not become exhausted by secretion in the absence of a renewal of supply, has been urged against the assertion.¹ The search for iodized compounds in the blood or lymph, in which the product might be expected, becomes a search for minute traces and involves a most refined chemical technic. The newest researches by Blum and Grützner³ in Frankfurt conclude that organic iodine compounds, such as one would expect in the case of thyroid secretion, are not to be found in normal blood. Small amounts of iodine in inorganic form may be discovered now and then; but they are accidental and are derived directly from the food. The blood from patients suffering from various pathologic conditions has at times been found to exhibit organically combined, that is, non-ionized, iodine. This is particularly true in eclampsia. This indirect fact will not, however, justify the conclusion that iodine forms a part of the normal secretory product of the thyroids. The bearing of the discovery must await an accumulation of experimental evidence.

ALFONSO CORTI, A SUBMERGED HISTOLOGIST

The name of Marchese Alfonso Corti is permanently associated with his great discovery of the spiral "organ of Corti," containing the terminal auditory apparatus of the cochlea, and its component parts, eponymically known as the cells, ganglion, membrane, rods, teeth and tunnel of Corti. Beyond this fact and the titles of his works, nothing whatever has been known of his life to date. Hyrtl, it is true, designated him as his prosector,¹ and Corti's epoch-making monograph of 1851, a milestone in the history of otology, gave him the widest reputation. His brother Luigi, a prominent Italian statesman and diplomatist, known during his term of residence in nearly all the embassies of the greater cities, became Minister of Foreign Affairs under Cairoli in 1878. The elder Corti himself, however, although living and working in the full current of modern science, suddenly and mysteriously sank out of public recognition about the middle of the nineteenth century and became as one submerged.

In 1907, Dr. Joseph Schaffer of Vienna applied to Prof. Max Neuburger for biographic information about Corti, and received the significant reply, "Corti belongs among those whose names are on every lip and of whose lives one knows nothing." The distinguished medical historian was able, however, to put Dr. Schaffer in touch with various Viennese archives of documents, thus starting him on a train of research the results of which have been recently published.² A brief abstract of these may be of interest to our readers.

Alfonso Corti, the son of a Piedmontese marquis of the name, was born on one of his father's estates at Gambarana, Sardinia, June 15, 1822. After completing a course of philosophical studies at Pavia, he entered the medical school there in 1841, mainly, as he himself said, through a particular liking for anatomy, human and comparative. For four years he devoted himself to the subject, under the direction of Panizza and Rusconi, and during the time made many preparations for the Royal Museum of the city. His industry and his special aptitude soon gave him the position of actual, if not nominal, assistant at the university. This post, however, was soon abandoned for the attractions of the New Vienna School, of which Hyrtl, just called from Prague and perhaps the greatest anatomic teacher of his time, was then the bright particular star. Reaching Vienna in 1845, Corti appears to have first matriculated at the university about 1846-1847, and shortly after was assisting Hyrtl in the preparation of lecture specimens. Twelve human and twenty-four comparative preparations of Corti's handiwork are still in the Anatomical Museum at Vienna. During his vacations home, he made collections of marine zoology on the Italian coast, some of which he took back to Hyrtl. He soon mastered the German language, but his inaugural dissertation, on the vascular system of *Psammosaurus griseus* (Vienna, 1847), dedicated to Hyrtl and illustrated with six original drawings, was written, as then usual, in Latin. Dec. 16, 1847, Corti was chosen as Hyrtl's second assistant (without emolument), after an official demonstration of his practical skill in which his fluency in German was amply displayed. Hyrtl and Czermak both spoke in glowing terms of this demonstration (on the neck), of which Corti's holographic report still exists at Vienna. During the March revolution of 1848, the university buildings, containing the anatomic institute, were turned into a barrack, and Corti's laboratory was transferred to the narrow confines of the Josephinum. He therefore went up to Berlin to follow the lectures of Johannes Müller, who seems to have spurred him to the study of the higher sense organs, as shown by Corti's next publication,³ on the

2. Biedl, A: Die innere Sekretion.

3. Blum, F. and Grützner, R.: Studien zur Physiologie der Schilddrüse. V. Mitteilung. Kommt Jod im Blut vor? Ztschr. f. physiol. Chem., 1914, xci, 450.

1. Hyrtl: Lehrbuch, Ed. 14, p. 626. A short sketch of Corti's work is given in Hirsch: Biographisches Lexikon, ii, 86.

2. Schaffer: Anat. Anzeiger, 1914, xlv, 368. See also, Brückner, G.: Arch. f. Gesch. d. Naturwissensch., 1913, v, 69.

3. Corti: Müller's Arch., Berlin, 1850, p. 273.

anatomy of the retina (1850). In this he discovered the origin of the optic nerve fibers of the retina from the multipolar cells of its inner layer. In the early autumn of 1850, Corti was in Utrecht, but it is inferred that he began his studies on the cochlea at Würzburg prior to this visit, since he had already lent drawings to Kölliker and studied the retiform arrangement of cardiac muscle with him. Kölliker, in his work on microscopic anatomy (1850), already mentions Corti's work on the lamina spiralis. June 30, 1851, Corti published his *opus magnum*, on the auditory organ of mammals, in particular the cochlea, in Kölliker's *Zeitschrift*.⁴ Kölliker gives a full account of Corti's work in his "Handbook of Histology" (1852), and in the second volume he characterizes it as the starting point of any exact knowledge of the cochlea. It is interesting to note that Corti appears to have employed the carmin stain before Gerlach. His confirmed Corti's discovery that the spinal ganglion of the cochlea nerve contains bipolar cells, in the embryo, and Retzius, by means of Golgi preparations. The second part of the monograph, which was to deal with the human cochlea and the vestibule of mammals, and incidentally to extend morphologic investigation to a great variety of animals and apply the laws of acoustics to the elucidation of auditory functions, was never completed. Shortly after the publication of the memoir, Corti disappeared, "like a meteor from the horizon line," and was never heard from again as a contributor to scientific literature. What was the cause of the mystery?

In 1852, he returned to Italy, sending to Kölliker from Turin what was to be his last communication, on a dissection of an elephant in the Royal Museum at Stupinigi, made at the instance of Professor de Filippi. About this time he began to suffer from a severe arthritis deformans, acquired in early youth, which involved his hands and feet to the extent that he could neither move nor eat without assistance. Confined to his chair by increasing pain and absolute helplessness, he was forced to give up his scientific and social activities and retire to his estate, the Villa Mazzolino, near Casteggio, where he took up wine culture with the same zeal and skill which he had hitherto devoted to histology. The improvements and novelties introduced by him are said to have been of great benefit to the peasants of the country round, the Corti estate being virtually a school of agriculture. In 1855, he married Maria Bettinzoli, a lady of noble birth, by whom he had two children. His son married a Countess Sanseverino (whose name suggests Stendhal's famous heroine) and continued his father's enologic activities at Corvino San Quirico, where the eminent histologist himself died, Oct. 2, 1876.

4. Corti: Recherches sur l'organe de l'ouïe des mammifères, 1^{re} Partie, Limaçon, Ztschr. f. wissensch. Zool., 1851, 109.

Current Comment

UNWRAPPED BREAD

The increasing displacement in this country of home-made bread by the bakery loaf has been accompanied by a growing attention to the sanitary aspects of the baking industry. Attempts, in large part successful, have been made to improve the conditions under which bread is prepared in city bakeries. It is evident, however, that the conditions of distribution as well as of preparation need to be safeguarded. We have already commented¹ on the possible dangers of bacterial contamination of bread through handling by typhoid or other disease carriers. Recent studies have added to the evidence we surveyed at that time. In a paper by Jacobs, LeClerc and Mason² of the United States Department of Agriculture it is shown that the surface of wrapped bread purchased from retail markets is more nearly free from organisms than unwrapped bread obtained at the same time from the same sources; *Bacillus coli* was found more than eight times as frequently in the unwrapped loaves. This result is substantially the same as that obtained by Katherine Howell³ on which our previous discussion of this subject was based. Curiously enough, these later writers make no reference to Miss Howell's work. With respect to the effect of wrapping on the palatability and general quality of bread, the conclusions of Jacobs, LeClerc and Mason are generally favorable. They state that, while bread as it comes from the oven has a sterile crust, it may become contaminated with organisms while cooling in the laboratory and therefore should be wrapped as soon as it is sufficiently cooled, a period which they fix at approximately three hours. In their discussion, however, these writers do not sufficiently discriminate between the sanitary importance of organisms such as molds or harmless air bacteria, and definite pathogenic microbes that may be smeared on the bread from infected hands. Protection of the bread from contact with fingers or mouth spray is much more essential than protection from ordinary dust. The fact that "bread which was cooled only one hour before wrapping retained heat and moisture enough to favor the growth of certain organisms" does not necessarily mean that a higher degree of safety is obtained if wrapping is delayed for two hours longer, and the authors would probably not wish such a conclusion to be drawn from their work. One practical point brought out in this paper deserves especial mention, namely, that unwrapped bread becomes stale noticeably sooner than wrapped bread and that the gain to the baker by wrapping undoubtedly more than balances the extra cost. Of great economic importance—when we consider bread, economy is important—is the reduction in weight of the wrapped loaf as compared with the unwrapped. A conference with a number of bakers showed that the cost of wrapping is from

1. The Bacterial Contamination of Bread, editorial, JOURNAL A. M. A., July 6, 1912, p. 39. The Wrapping of Baker's Bread, editorial, JOURNAL A. M. A., Oct. 10, 1914, p. 1298.

2. Jacobs, LeClerc and Mason: Am. Jour. Pub. Health, 1914, iv, 721.

3. Howell, Katherine: Am. Jour. Pub. Health, 1912, ii, 321.

4 to 5 per cent. On the other hand, the reduction in weight of wrapped loaves varied from 7.5 to 14 per cent. The consumer can be expected to bear at least half the cost of wrapping, or 3 per cent., but he should not be compelled to pay all of it, including a profit. A similar, but less comprehensive, study made by the Research Laboratory of the New York City Health Department has also been reported recently,⁴ and this also confirms the results of Miss Howell respecting the bacterial superiority of wrapped loaves. We may consider it as established that the distribution of unwrapped bread offers manifold possibilities of infection, and that the use of wrapped bread not only offers some safeguard against disease transmission, but entails no economical disadvantage.

THE ARTIFICIAL MENOPAUSE

The opinions held by gynecologists with respect to the effects of complete surgical extirpation of the ovaries are not in entire accord. Probably the incidence of age plays a part in the character of the individual consequences. In women of child-bearing age the operation often results in a characteristic train of symptoms known as the artificial menopause. A great diversity of phenomena, such as excessive sweating, increased pulse-rate and signs of vasomotor instability, have been described, most of them manifesting themselves comparatively soon after the operation and finally disappearing after some months.¹ It is not easy to evaluate and correctly to interpret a group of symptoms which are particularly exhibited in relation to the nervous system and which have the further psychologic uncertainty that attaches to human evidence of a personal sort. Long ago the effects said to follow ovarian extirpation were charged to a condition of overexcitability in the sympathetic system. Obviously it would be a great advantage to have some tangible, objective indication of what, if anything, actually takes place in the nervous system as the result of the operative procedure referred to. The evidence should include something more than mere "behavior" or manifestations of peculiar "feelings." Drs. Hoskins and Wheelon² of the Northwestern University Medical School in Chicago have determined the degree of sympathetic irritability in animals at various intervals before and after ovariectomy. The vasomotor system was selected as exemplifying the sympathetic system as a whole. Blood-pressure records were obtained to show the influence of selected drugs. The reactions to standard quantities of nicotin gave an index of the irritability of the sympathetic nervous system proper and similarly the reactions to epinephrin indicated the condition of the peripheral vasomotor structures. The research showed a marked augmentation in the vasomotor reaction to the nicotin within from six to eight weeks after removal of the ovaries. The reaction

to epinephrin was not similarly increased, thereby suggesting that the augmented irritability was neither in what has been termed the sympathetic "receptive substance" nor in the vascular musculature, but rather in the sympathetic system proper. Hoskins and Wheelon conclude that these results, in conformity with clinical evidence, indicate that the operation does cause a heightened irritability in the sympathetic nervous system.

EDUCATIONAL WORK OF THE NEW YORK CITY HEALTH DEPARTMENT

A program of educational work recently undertaken by the Department of Health of the City of New York promises great things. Though familiarity with advances in medical and sanitary science is necessary to their highest efficiency, the medical and lay employees of health departments find it difficult to keep up with the rapid progress along such lines. To overcome this difficulty the New York City health department has provided four courses of lectures, one for its medical inspectors and other physician employees, one for its lay inspectors (food and sanitary), one for its hospital nurses, and one for its field nurses. Attendance is not compulsory, but employees are expected to be prepared to pass an examination, at the termination of the course, on the subjects discussed. All the courses except that for hospital nurses (which is given in the various hospitals for contagious diseases) are open to the public. The health department further offers to provide lectures on any of the subjects in the course on application from organizations. The plan and scope of this work are so good that the results cannot fail to be a great public benefit.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Personal.—Dr. Robert T. Legge has resigned as chief surgeon of the McCloud Hospital to take effect Jan. 1, 1915, and has accepted the appointment as professor of hygiene and university physician at the University of California, Berkeley.—Dr. Ernest L. Walker, formerly chief of the medical laboratories of the bureau of science of Manila and chief of the department of medical zoology in University of the Philippines, has taken up his work as associate professor of tropical medicine in the George Williams Hooper Foundation for Medical Research.—Dr. Charles E. Ide has resigned as health commissioner of Redlands and has been succeeded by Dr. Frank H. Folkins, who will give his entire time to the work.—Dr. Edmiston Darragh, formerly surgeon to the Consolidated Copper Mining Company, Cananea, Mex., has moved to Los Angeles.—Dr. James W. Richards has succeeded Dr. Harry E. Kirschner, as first clinical assistant at the Pottenger Sanatorium, Monrovia.

GEORGIA

Additions to Library.—The library of the Georgia Medical Society, Savannah, has been given 450 bound volumes by Dr. Isaac Minis Hays of Philadelphia.—Dr. William W. Owens, Savannah, has presented to the society an engrossed and framed copy of the notice of the meetings issued by the society in 1807.

4. Weekly Bulletin of the Dept. of Health of the City of New York, Oct. 10, 1914.

1. Compare Schick's: *Innere Sekretion und Nervensystem*, Lewandowsky's *Handbuch der Neurologie*, 1913, iv, 434. This gives the literature.

2. Hoskins, R. G., and Wheelon, H.: *Ovarian Extirpation and Vasomotor Irritability*, *Am. Jour. Physiol.*, 1914, xxxv, 119.

ILLINOIS

Chicago

Personal.—Drs. John M. Kara and Duro Guca have sailed for Europe to enter the Red Cross work with Serbia.—Dr. and Mrs. William W. Meloy and son have returned from Europe.—Dr. Grace L. Meigs has been appointed by Miss Julia Latthrop, chief of the children's bureau of the U. S. Department of Labor, as expert on sanitation on the staff of that bureau. Dr. Meigs is a graduate of Rush Medical College and has done special work under Professors von Pirquet, Finkelstein and Von Bokay. She has recently been attending physician in children's diseases in Cook County Hospital, and will act in a general advisory capacity to the bureau in matters of child health and hygiene.

Clinical Meeting of Pediatricists.—A clinical meeting was held under the auspices of the Chicago Pediatric Society, October 29 to 31. On the first morning, the clinic was held at the Northwestern University Medical School; the afternoon clinic, at the Sarah Morris Memorial Hospital connected with the Michael Reese Hospital, and in the evening, Dr. Arthur Kendall delivered an address on "The Relation of Bacteria to Summer Diarrhea in Infants." On the second morning, a clinic was held at the Children's Memorial Hospital; in the afternoon, visits were paid to the children's health stations, playgrounds, etc., and in the evening, a beef-steak dinner was given at the Auditorium Hotel with Dr. Frank S. Churchill as toastmaster. On Saturday morning, clinics were given at the Home for Destitute Children and Cook County Hospital; and in the afternoon, at the amphitheater of the Rush Medical College and the Annie Durand Hospital.

Wesley Memorial Hospital Fellowships.—The Wesley Memorial Hospital of Chicago has established five fellowships to be given yearly to those graduates in medicine who have clinical scientific problems that they wish to solve. The work will be done under a joint board made up from the staff of the Wesley Hospital and the laboratory departments of the Northwestern University Medical School; the clinical work to be done in the hospital and the laboratory work in the laboratory of the medical school. The problems are restricted to those having direct application to clinical medicine and surgery or the specialties. The fellowships are open to any graduate in medicine. The recipient of the fellowship will be required to devote his entire time during the first year, at least, to the prosecution of his investigation. It is hoped through these fellowships to correlate more satisfactorily than in the past the departments of clinical and scientific medicine.

INDIANA

Personal.—Dr. Charles A. Pfafflin, Indianapolis, returned from Europe, October 26.—Dr. Cassius E. VanMatre, New Castle, is reported to be critically ill at his home.

Small-Pox.—Thirty cases of small-pox have been reported brought to the isolation hospital at Whiting. Schools, churches and theaters have been ordered to be closed and the street cars passing through the city have been fumigated, the population being vaccinated. Small-pox is also reported from Porter.

Women Physicians Form Club.—Twenty-five women physicians of Indianapolis met October 18 and organized the Indianapolis Women Physicians' Club, one of the chief aims of which is to establish a hospital for the care of sick children. Dr. Hannah M. Graham was elected temporary chairman and Dr. Lillian B. Mueller, secretary.

KENTUCKY

Operating Room Donated.—An operating room, modernly equipped, was given by Charles R. Long to the Louisville Masonic Widow's and Orphan's Home, in memory of the father of the donor. The gift was accepted by President Fred J. Drexler of the board of directors and Dr. Ap Morgan Vance, president of the medical board.

Clinic Held and Hospital Dedicated.—A new hospital recently erected and equipped at a cost of \$150,000 on the campus of the W. C. T. U. settlement school, Hindman, Knott County, was dedicated October 19, Dr. William S. Stucky of Lexington making the dedicatory address. Dr. Stucky, with Dr. George H. Wilson of Lexington and Dr. Isadore N. Bloom of Louisville, also held a four-day clinic at Hindman.

LOUISIANA

Louisiana Health Train.—The Educational-Hygiene exhibit, which is a constant feature in the health educational cam-

paign in Louisiana, has been consolidated, and two cars owned by the State Board of Health are being used throughout the state for health propaganda. Educational-Inspection Car No. 1 is used as living quarters for the force. It contains drawing rooms, sleeping quarters, living quarters, bath room, lavatories, linen closets, kitchen and engine room in which a motor is installed that generates power for electrical models, fans and lights. The force consists of Dr. Dowling, president, inspectors, sanitary engineer, bacteriologist and office help. All mail for the central office is handled from the car. Educational Car No. 2 contains exhibits devoted to child hygiene, community hygiene and disease prevention. Motion picture entertainments are given, in addition to lectures and other exhibitions offered by the health train. On invitation the cars will be taken to the meetings of the Southern Medical Association in Richmond and to the meeting of the American Public Health Association in Jacksonville, making stops in large cities en route. For this trip a very complete exhibit on bubonic plague has been arranged which will show species of rats common in the United States, plague infected rats in various stages, species of fleas, exhibits of *Bacillus pestis*, models of rat proofing and pictures of specific features of plague eradication. Literature on different topics is to be distributed. On the return of the cars from Jacksonville, the annual trip through the state will be made and probably last four months.

MICHIGAN

Personal.—Dr. Cedric P. Sibley, Detroit, is on duty at the Military Hospital in Vienna.—Dr. James N. Garber, Detroit, was seriously injured in a collision of automobiles, October 25.—Dr. Robert B. Gaston has been appointed senior house surgeon of Grace Hospital, Detroit.

Foot-and-Mouth Disease.—Dairy cattle around Niles and Watervliet have been so seriously affected that a number of federal investigators have been sent to inspect every farm and every animal in Berrien County. A rigid quarantine on diseases of cattle has been established throughout the county except four townships.

State Tuberculosis Commission.—The president of the State Medical Society has appointed the following tuberculosis commission: Drs. Victor C. Vaughan, Jr., Detroit; Arthur F. Fischer, Hancock; Robert L. Dixon, Wahjamego; Arthur H. Burleson, Olivet; Alvin H. Rockwell, Kalamazoo, and Clarence M. Williams, Alpena.

Sanitary Survey of Copper Country.—Passed Assistant Surgeon Robert Olesen and assistant Joseph S. Bolten, U. S. Public Health Service, are making a sanitary survey of the Copper Country, including industrial conditions, sewerage and water systems, etc., and are also holding conferences with the township and village boards of health regarding the sanitary conditions of the community.

MINNESOTA

Health Week Proclaimed.—Governor Eberhart has issued a proclamation setting aside the week of November 29 to December 5 for the study of general health problems.

Results of Typhoid Vaccination in Hospital for the Insane.—A report issued October 14 by the State Board of Control shows that of nearly 2,000 who have received typhoid vaccination at the Fergus Falls Hospital for the Insane within the last two years, none has contracted the disease. Five cases have occurred in the same time among unvaccinated employees.

MISSISSIPPI

Yellow-Fever Fund.—It is announced that there still remains in a bank in Grenada a balance of \$2,700 to the credit of the yellow-fever fund subscribed during the epidemic of 1878.

Personal.—Dr. Hyman M. Folkes, Biloxi, has been elected president of the Gulf Coast Life Insurance Company.—Dr. Joel C. Hall, Anguilla, has been appointed surgeon-general of the United Confederate Veterans, vice Dr. Christopher H. Tebault, New Orleans, deceased.—Dr. J. C. R. Gathings, Parchman, has resigned as superintendent of the Mississippi Penitentiary, Vicksburg, to take effect Jan. 1, 1915.

MISSOURI

District Society Organized.—The organization of the Northeast Missouri Medical Association was perfected at a meeting held in Memphis, October 7. The district includes the counties of Clark, Scotland, Schuyler, Lewis, Knox and

Adair. About twenty physicians were present and the following officers were elected: president, Dr. Clarence N. Frame, Ewing; vice-presidents, Drs. Phillip M. Baker, Memphis, and Alexander C. Crank, Canton; secretary-treasurer, Dr. John S. Gashwiler, Novinger.

NEW YORK

Tuberculosis Fee for Physicians.—After January 1 physicians of Syracuse will receive \$1 for each case of tuberculosis reported to the Local Bureau of Health.

New York City

Award of Alvarenga Prize.—The Alvarenga Prize for 1914 has been awarded to Dr. Herman B. Sheffield for an essay entitled "The Fundamental Principles Involved in the Use of the Bone Graft in Surgery."

To Regulate Keeping of Chickens.—An attempt recently to put certain restrictions on those keeping chickens in the city limits met with considerable antagonism, and modifications were considered. At a recent meeting of the Board of Health it was ruled that roosters must not be kept in the city; that runways and coops must be whitewashed and sanitary, and that the chickens must not be kept within 25 feet of any inhabited or public building other than that of the owner, and none may be kept in tenement houses.

Cerebrospinal Meningitis.—The health department calls attention to a considerable increase in the number of deaths reported from epidemics of cerebrospinal meningitis. During the week ended October 24, ten deaths have been reported, as against one in the corresponding week of 1913. It is suggested that the increased mortality may be a forerunner of an approaching epidemic. The department, however, is well prepared to handle the situation, having a good supply of antimeningitis serum for free distribution.

Ask Appropriation for Inebriate Farm.—The Health Federation of the city of New York has asked the city to set aside \$39,032 for use by the Board of Inebriety at the farm in Warwick, purchased by the city several years ago. A modern dormitory is now being built on the farm and existing buildings are being remodeled. When the work is complete there will be accommodations for several hundred inebriates on the farm. There are now eighty-six patients in city hospitals waiting to be removed to the country institution.

Health Advice for Policemen.—Commissioner Woods of the police department has distributed booklets to the policemen of the city on "How to Keep Well," which have been prepared by a committee of police surgeons, consisting of Drs. Arthur S. Vosburgh, Henry C. Webster and Edwin C. Fiske, acting under the direction of acting chief surgeon, Dr. Edward T. Higgins and Health Commissioner Sigismund S. Goldwater. It is especially emphasized that a low sickness rate means increased efficiency for the department and also contributes to the welfare of the men and their families.

Medical Inspectors for Defective Pupils.—In order to meet the necessity for medical inspectors of ungraded classes, the board of education has amended its by-laws so as to provide for them. The amendment requires that the applicants, in addition to graduation from a medical school recognized by the Regents of the State of New York, must have had two years' specialized experience in the treatment of nervous diseases of children, with special reference to mental defectives. It was further ruled that on the nomination of the Board of Superintendents the board of education might appoint such inspectors and assistant inspectors of public school athletics, and such inspectors and assistant inspectors of ungraded classes as it deemed necessary. Such inspectors and assistant inspectors shall be subject to the supervision and direction of the board of education.

NORTH CAROLINA

New Wing to Asheville Hospital.—Work will begin shortly on the new fire-proof wing of the Asheville Mission Hospital. The building will be fire-proof and will cost about \$50,000.

Tuberculosis Day Observance.—The State Board of Health has prepared and distributed in churches and schools throughout the state an elaborate program for tuberculosis day, November 20.

NORTH DAKOTA

Personal.—Dr. Clinton E. Spicer, Litchville, has returned from abroad.—Dr. Arnt G. Andersen has disposed of his practice in Hillsboro to his partner, Dr. Syver Vinje, and has located in Minneapolis, Minn.

OHIO

Personal.—Dr. William Clyde Leeper, McConnelsville, has been elected president of the Eighth Councilor District Medical Society.—Dr. Henry M. Metcalf, Elyria, secretary of the Loraine County Medical Society, has been elected treasurer for the unexpired term of the late Dr. Evan Cameron.

Component Society Recognized.—The officers of the Ohio State Medical Association have notified the secretary, Dr. Lewis R. Culbertson, Zanesville, that they have recognized the Muskingum County Medical Society as the component society for that county. Members of the Muskingum County Academy of Medicine will be reinstated as members of the Muskingum County Medical Society on payment of all dues.

Trust Fund to Western Reserve University.—By the will of the late Liberty E. Holden, a trustee of the University, who died in 1913, his estate appraised at from three to six millions, is left to the trust fund, one-sixth of which, less \$50,000, the Medical School of Western Reserve University is to receive eventually. The terms of the gift are very liberal and the income is to be devoted to research on problems on the cause and cure of disease.

Faculty Changes at Western Reserve.—Dr. Howard T. Karsner, assistant professor of pathology in Harvard Medical School, has been appointed professor of pathology and will begin his duties December 1.—Dr. Henry O. Feiss has been appointed full-time instructor in experimental medicine.—Dr. Gaius E. Harmon, Randolph, Mass., full-time instructor in hygiene; Bradley M. Patten, Ph.D., full-time instructor in histology and embryology and George E. Simpson, B.S., full-time instructor in organic and biochemistry.

PENNSYLVANIA

Sanatorium Opened.—The Third State Tuberculosis Sanatorium of Pennsylvania, located at Hamburg, was opened for patients October 26. The necessity for this institution is evident when it is considered that in addition to the 1,150 patients under treatment at Mt. Alto Sanatorium and the 400 who are receiving care at the Cresson Sanatorium, there is still a waiting list of more than 1,000. The new Hamburg Sanatorium will accommodate 550 of these. The institution was inspected by the governor and other officials of the state on October 24.

Personal.—Dr. Calvin N. Wherry, Chatham, has resigned as a member of the medical staff of the Cresson State Sanatorium.—Dr. Walter J. Cathrall, South Bethlehem, is reported to have been adjudged insane and committed to the Rittersville State Hospital.—Dr. Charles C. Waggoner, Corry, while hunting near Garland, October 16, was accidentally shot in the eye by a companion.—Dr. Clair W. Burket, Altoona, fell while hunting near Spruce Creek recently, fracturing his left arm.—Dr. Henry X. Bonbrake, Chambersburg, has been admitted to the Chambersburg Hospital for treatment.—Dr. William C. White, medical director of the Tuberculosis League of Pittsburgh, has been elected president of the First North Atlantic Tuberculosis Conference.

Philadelphia

College of Physicians Residuary Legatee.—The late Dr. Morris Longstreth, who at one time held the chair of pathological anatomy in Jefferson Medical College and later was in practice at Cambridge, Mass., and Barcelona, Spain, made the College of Physicians of Philadelphia his residuary legatee.

Personal.—Dr. Ellwood R. Kirby has been appointed consulting and chief surgeon for the Masonic Home, Elizabethtown, Pa.—Dr. Thomas A. Benbow, an Australian, has resigned as house physician of Jefferson Hospital and has started for England to offer his services to the Royal Army Medical Corps.—Dr. Joseph C. Doane was named, October 27, by Director Harte, as the chief resident physician at the Philadelphia General Hospital. The position pays \$4,000 a year.

Faculty Changes.—The Medico-Chirurgical College of Philadelphia announces the following faculty changes: Dr. Herbert H. Cushing, professor of practical anatomy; Dr. Ardrey W. Downs, professor of experimental physiology; Vernon K. Suydam, professor of physics; Charles E. Vanderkleed, professor of analytical chemistry; Dr. John H. Small, associate professor of bacteriology; Dr. Eugene A. Case, associate professor of pathology; Dr. Philipp Fischelis, associate professor of histology and embryology; Dr. Guy Hinsdale, Hot Springs, Va., associate professor of climatol-

ogy, Dr. Arthur C. Morgan, associate professor of medicine; Dr. John Stewart Rodman and Dr. John J. Gilbride, associate professors of surgery; Drs. Howard L. Jameson and Andrew Callahan, associates in medicine, and Dr. Robert F. Ridpath, associate in laryngology.

The Alvarenga Prize.—The College of Physicians of Philadelphia announces that the next award of the Alvarenga Prize being the income for one year of the bequest of the late Señor Alvarenga and amounting to about \$250, will be made on July 14, 1915, providing a worthy essay is offered. Essays may be on any subject on medicine, but must not have been published. They must be typewritten and if written in any language other than English, should be accompanied by an English translation and must be received by Dr. Francis R. Packard, secretary of the college, 19 South Twenty-Second Street, Philadelphia, on or before May 1, 1915. Each essay must be sent without signature, but must be plainly marked by a motto and accompanied by a sealed envelope having on its outside the motto of the paper and within the name and address of the author. The successful essay or a copy of it is to remain in the possession of the college. Other essays will be returned on application within three months after the award has been made.

WASHINGTON

Personal.—Dr. William N. Kellar, Tacoma, has been appointed superintendent of the Western Washington Hospital for the Insane, Steilacoom, succeeding Dr. Arthur P. Calhoun, Fort Steilacoom, resigned.—Dr. Alfred S. Oliver, Jr., who has been acting superintendent of the Western Washington State Hospital, Medical Lake, has been appointed superintendent of that institution.—Dr. Charles C. Hunt, Seattle, was the guest of honor at a dinner given by the Lee County (Ill.) Medical Society at Nachusa Tavern, Dixon, October 14.

WEST VIRGINIA

A Year's Tuberculosis Campaign.—Dr. Harriet B. Jones of Wheeling, director of the West Virginia Antituberculosis League, reports work done from Sept. 15, 1913, to Sept. 15, 1914, under a legislative appropriation of \$9,900, the Baltimore and Ohio Railroad Company donating the use of a car and free transportation for six months. The car was fitted up in August with an exhibit, lighting plant and literature. No less than 100,000 people saw the exhibit in six months. Dr. Thurman Gillespy of Wheeling accompanied the car as lecturer. Dr. Jones preceded the car, talking in schools and giving lectures at night to adults. The statistics of the work done include 44 counties visited by the lecturers, 33 counties visited by the exhibit car, 624 talks given in schools to 53,354 pupils, 102 lectures to over 19,000 adults, 16 county teachers' institutes attended, lectures given to over 70,000 pupils and 250,000 pieces of literature distributed.

WISCONSIN

Medical Secretaries Elect.—At the annual meeting of the State Secretaries Association of Wisconsin, which is made up of secretaries of county medical societies, Dr. Joseph F. Smith, Wausau, was elected president; Dr. Mina B. Glasier, Bloomington, vice-president, and Dr. Henry W. Morgenroth, Oshkosh, secretary.

State Foes of Tuberculosis Meet.—The Wisconsin Antituberculosis Association met in Milwaukee, October 16, and elected the following officers: president, Dean Louis Reber; vice-presidents, Drs. Timothy L. Harrington, Milwaukee, and Gustave Windesheim; secretary, Dr. Clarence A. Baer, Milwaukee. Dr. Mazyck P. Ravenel, Madison, who resigned as president on account of his having accepted a position on the faculty of the University of Missouri, delivered his farewell address, in which he reviewed the progress in health education and legislation in Wisconsin during the last few years.

GENERAL

Southwest Physicians to Meet.—The ninth annual meeting of the Medical Association of the Southwest will be held in Galveston, Tex., November 10 and 11, under the presidency of Dr. Samuel S. Glasscock, Kansas City, Kan.

Meeting of Pan-American Physicians.—At the meeting of the executive committee of the Pan-American Medical Congress in Cincinnati, October 28, the following officers were elected: president, Dr. Charles A. L. Reed, Cincinnati; sec-

retary, Dr. Ramon Guiteras, New York City; and treasurer, Dr. Henry L. E. Johnson, Washington.

Medical Examination of Canal Zone Children.—The annual examination of the children attending the Canal Zone schools took place during the week of October 26. By this means an accurate record of schoolchildren is expected to be kept, not only with reference to communicable diseases, but also in regard to defective teeth and defects in sight, hearing and the respiratory passages.

Examinations for Army Medical Corps.—The Surgeon-General of the Army announces that a preliminary examination for the Army Medical Corps will be held at various points in the United States, January 11. Applicants must be citizens of the United States, between 22 and 30 years of age, graduates of medical schools legally authorized to confer the degree of Doctor of Medicine, of good moral character and habits and shall have had at least one year of hospital training as an intern after graduation. Information regarding these examinations may be procured on application to the Surgeon-General, U. S. Army, Washington, D. C.

Railway Surgeons Elect.—At the annual meeting of the Association of Seaboard Airline Railway Surgeons at Petersburg, Va., October 19-21, the following officers were elected: president, Dr. Milton L. Wood, Montgomery, Ala.; vice-presidents, Drs. Robert L. Harris, Jacksonville, Fla.; Frank L. Eskridge, Atlanta, Ga., and Wilbur A. McPhaul, Lumberton, N. C.; secretary-treasurer, Dr. Jarrett W. Palmer, Ailey, Ga.; and member of the executive committee, Dr. Emmett H. Terrell, Richmond, Va. The association decided to meet next year in August at Wrightsville Beach, near Wilmington, N. C.

New Officers of the Mississippi Valley Medical Association.—At the fortieth annual meeting of the Mississippi Valley Medical Association held at Cincinnati, October 27-29, Lexington, Ky., was selected as the next place of meeting and the following officers were elected: president, Dr. Hugh Cabot, Boston; vice-presidents, Drs. Willard J. Stone, Toledo, Ohio, and Albert H. Freiberg, Cincinnati; secretary, Dr. Henry Enos Tuley, Louisville (reelected); treasurer, Dr. S. C. Stanton, Chicago (reelected), and chairman of committee arrangements, Dr. Carl L. Wheeler, Lexington, Ky.

Bequests and Donations.—The following bequests and donations have recently been announced:

Presbyterian Hospital, Chicago, one-third of the estate of Thomas Murdoch, Chicago, which was appraised at nearly \$4,000,000, after the payment of specific legacies, by the will of Thomas Murdoch, Chicago.

Presbyterian Hospital, Children's Ward, \$2,120; Margaret Etter Creche, \$2,100; Bethlehem Creche, \$1,975; Wesley Hospital Children's Ward, \$1,875; Mary Thompson and Providence Hospitals, each \$1,289; Outing for Crippled Children and Jackson Park Sanitarium, each \$1,029, as the result of Children's Charity Tag Day in Chicago, October 24. There was donated for charities on Tag Day, nearly \$47,000.

FOREIGN

Death of Professor Pawlik.—The death is reported of Dr. Karel Pawlik, professor emeritus of obstetrics and gynecology in the Bohemian University of Prague, aged 65.

New Institute of Hygiene at Madrid.—The *Siglo Medico* states that congratulations are in order for the new and elaborately equipped building just completed at Madrid to house the Instituto de Higiene de Alfonso XIII which had long outgrown its old quarters. Professor Ramon y Cajal has been at its head since it was founded in 1899, and is still director in chief. The extensive *Parque sanitario*, with its isolation buildings, is in charge of V. Cortezo, and R. Serret, one of the three editors of our exchange, is at the head of the vaccine department. The two other members of the editorial staff of the *Siglo Medico*, C. Cortezo and Pulido, are on the national board of public health.

American Red Cross Relief Work Abroad.—The American Red Cross, October 19, cabled to the American consul-general in Canton, China, a contribution of \$5,000 from its contingent fund to aid in the relief of famine sufferers in central China. From the same fund \$3,000 was cabled to Ambassador J. Morgenthau in Constantinople for the survivors of the earthquake in Konia Province, Turkey, where 3,000 persons were killed and many injured and made destitute. In response to the telegraphic appeal of Rear Admiral Howard of the United States Navy, Charles J. O'Connor, director of the Pacific division of the American Red Cross, has been authorized to buy \$1,000 worth of pork and beans for the starving thousands in the vicinity of Acapulco. Secretary of the Navy Daniels has arranged to send the supplies to Acapulco on the naval collier *Nero*.

CANADA

University News.—McGill University will grant degrees to all fourth-year students who enlist with the Canadian expeditionary forces before the conclusion of the present college term. First, second and third year students will be given credit for full term's academic work; and on their return will be admitted to the class immediately above.

Montreal Wins in Vaccination Suit.—The Court of King's Bench, Montreal, has given judgment in a vaccination case where the parents of a child vaccinated by order of the Medical Department of Health and performed by an officer of the board of health, sought to recover \$10,000 damages owing to subsequent paralysis of the arm. A jury had awarded \$8,000 damages but the King's Bench has reversed this judgment and now the case has been settled in favor of the city. The physicians called as witnesses disagreed as to whether the paralysis had been caused by the vaccine or not, so the judge ruled the jury had no jurisdiction, as it was not a matter of fact but a matter of opinion.

Recognition of Ontario Physicians Abroad.—The medical faculty of Queen's University, Kingston, Ont., have adopted the following resolution: Whereas, a number of physicians registered in Ontario have volunteered for the Imperial army medical service, and have not been accepted because the Ontario qualifications are not recognized in Great Britain; Resolved, that in the opinion of the medical faculty of Queen's University the time is opportune to establish reciprocal relations between the General Medical Council of Great Britain and the Medical Council of Ontario, and, resolved, that the faculty suggest to the officers and executive of the Ontario Medical Council that a special meeting of the council be held at the earliest possible moment to deal with this important matter.

Personal.—Dr. Joseph O. Reaume, Windsor, has resigned as minister of public works of Ontario.—Dr. William G. Anglin, senior surgeon Kingston General Hospital, has volunteered for service in the second Canadian force.—Dr. James W. Good, Winnipeg, has returned from a trip round the world, in which he spent considerable time in the hospitals of Russia, China and Japan.—Dr. John S. Gray, Winnipeg, registrar of the Manitoba College of Physicians and Surgeons, has returned from England.—Winnipeg contributed the following medical officers to the Canadian overseas force: Drs. Claude E. Fortin, John A. Gunn, George S. Mothersill, Walter L. Watt, Percy G. Bell, J. F. Bell, Stanley A. Smith, John H. Leeming, John D. McQueen and William Webster.—Dr. George W. Ross is lecturing on therapeutics at the University of Toronto during the absence of Dr. Robert D. Rudolf in Europe.—Dr. William J. O. Malloch, Toronto, first assistant surgeon in the service of Dr. Herbert A. Bruce at the Toronto General Hospital, recently underwent operation for gall-stones and is recovering rapidly.

WAR NOTES

Splints Given to Red Cross.—The University of Pennsylvania Hospital has contributed to the American Red Cross, 300 pieces of woven wire splints for use in Europe.

Anticholera Vaccination.—The troops in Austria and Hungary are being vaccinated against cholera on an extensive scale, both those on the firing line and in the garrisons.

Celebrates Eightieth Birthday in the Field.—Dr. Hertwig of Berlin is now serving in the eastern German army on his third military campaign. He recently celebrated his eightieth birthday in the field. He began practice in 1860.

Courses of Lectures on Surgery in the Field.—Our Italian exchanges state that lectures on military hygiene and sanitation are being held in Rome and other cities and towns are urged to follow this example.

American Red Cross Expedition in Berlin.—Of the seven expeditions sent out by the American Red Cross, the one destined for Germany had arrived at Berlin by October 18, and passed on to the eastern seat of war.

Exportation of Drugs and Hospital Supplies Prohibited in Austria.—The list of articles includes vaccines and laboratory animals as well as phenol, mercury, strychnin, iodine, bismuth, materials for culture mediums, catgut, morphin, etc.

University Gives Ambulances.—Yale University has advised the American National Red Cross that it will give two ambulances for European relief work, one for Germany and the other for the American Ambulance Hospital in Paris.

Professor König Not Dead.—Our German exchanges of October 18 correct the notice they had previously sent out in

regard to the death of Professor Friedrich König in the field. It was a younger brother, a captain of cavalry, who was shot in active service in the East.

Red Cross Hospital Trains.—The German Red Cross has equipped twenty-four hospital trains, each with dining car, four physicians, thirty-six attendants, bookkeeper and porter, and beds for 320 wounded. Nearly all the trains are in use and have rendered excellent service.

Hospital Ship Wrecked.—The British hospital ship *Rohilla*, en route to a Belgian or French port, bearing physicians, nurses and hospital supplies, ran on the rocks near Whitby, October 30, and was totally wrecked. One hundred and thirty of the passengers and crew were saved. All nurses, it is believed, were saved, but eleven physicians are supposed to have perished.

England's Queen Appreciates Work of Red Cross.—Queen Mary of England has communicated to Mrs. Lewis Harcourt, one of the honorary secretaries of the woman's war relief fund in London, her appreciation of the sending of the American National Red Cross Ship *Red Cross* with American surgeons and nurses, and quantities of hospital supplies in their hour of distress.

American Surgeons Commissioned in Russian Army.—A telegram from Petrograd announces that commissions as generals in the Russian medical service have been given to the two senior surgeons of the American Red Cross units assigned to service in Russia while the four junior surgeons have been commissioned as colonels in the medical corps. The units have been assigned to duty at Kiev.

Wounded in Brittany.—In a letter to Miss Mabel T. Boardman, chairman of the relief board of the American National Red Cross, written from Val Fleuri, Dinard, France, a pathetic appeal is made for hospital supplies for the wounded which number 42,000 in this corner of Brittany alone. The special needs are for wools for socks, wristlets and chest protectors; absorbent cotton and antitetanus serum.

Losses in German Medical Corps.—Up to October 24, it is reported, that the medical corps of the German army has lost 74 officers dead from wounds, 37 have been wounded, 13 are missing, 8 have died from disease and 3 are prisoners of war. —In the medical branch of the Austria-Hungary service, 8 officers have been killed, 25 wounded, 1 is missing and 25 are incapacitated by reason of illness.

Organization of Welfare Work for Wounded Soldiers in Austria.—This work in Austria is divided into three departments: the direct care of the wounded, with central Red Cross headquarters at Vienna; the care of the families left dependent by the departure of the breadwinner for the front; and the care of the dependents left by soldiers who have been killed. Each branch has its separate office and information bureau, and receiving committee for donations.

Fiftieth Anniversary of the Geneva Convention.—This fall fifty years have elapsed since the Geneva Convention met to organize the systematic care of the wounded during war. The emperor of Austria in honor of the anniversary, which was celebrated with ceremony at Vienna, has founded an order with silver and bronze badges to be awarded to those in Austria-Hungary who distinguish themselves in Red Cross work either actively in the field or by contributions.

Canadian Hospital in London.—Surgeon-General Whitehead in command of the eastern district, in behalf of the war office, inspected the Queen's Canadian War Hospital, October 14.—The Anglo-Canadian Committee has raised \$85,000 for the equipment of the institution. At present 60 beds are occupied by wounded from Antwerp. The staff includes Sir William Osler, physician in chief; Dr. Donald Armour, surgeon in chief, and Drs. Frazier and Wallace, assistants.

American Medical Journals and the War.—Our Italian exchange, the *Polichinico*, commenting on the present reduction in size and contents of so many of the medical journals of the world remarks: "The American medical journals scarcely seem aware of the terrible conflict going on in Europe. They are keeping alight the torch of medical science. They arrive unfailingly and serenely although with occasional delays of two or three weeks; then they appear in a bunch."

Medical Supplies for England.—The British War Relief Association, New York City, announces that five cases of medical supplies, a case of blankets, one of shirts and socks and two of children's clothing have been sent to the head of St. Andrew's Ambulance Association.—An order has been placed with a Philadelphia firm by the British government for 6,000 packages of tetanus antitoxin, and with another for

MEDICAL NEWS

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500,000 yards of muslin for bandages.—A firm in Reading, Pa., has contracted to make 50,000 stretchers to be sent abroad; 1,000 stretchers are to be delivered each week.

More Red Cross Personnel to Go Abroad.—The American National Red Cross has decided to send two additional surgeons and six additional enrolled Red Cross nurses to England.—Two extra hospital units will sail for Serbia on the steamer *Finland*, November 17. Extra Unit Number 1 is in command of Dr. Ethan Flagg Butler of Washington, D. C., with Drs. S. H. Hodge, Knoxville, Tenn., and James F. Donnelly, Stapleton, S. I., N. Y., staff physicians. Dr. Ernest P. Magruder, Washington, D. C., is medical director of Extra Unit Number 2, and the staff physicians are Drs. Clapham P. King and Morton P. Lane, both of Washington, D. C.

New York, Dr. Richard Derby, Boston, and Dr. C. W. Dubouchet, an American, who lives in Paris. Contributions may be sent through J. P. Morgan Company, 23 Wall Street, New York.

LONDON LETTER

LONDON, Oct. 23, 1914.

The War

ENLISTMENT

Young men to the number of 700,000 have enlisted for the new army. Their physique is admirable and a great improvement on that of the past. Thus twenty years ago 40 per cent. of recruits were rejected on medical examination; ten years ago 30 per cent., now only 20 per cent. The aggregation of such a body of men in a country which does not maintain a large standing army presents a new and serious problem in sanitation. A reform introduced in 1907 by Sir Alfred Keogh, Director-General of the Army Medical Department, whose reappointment after retirement was announced in my last letter, has proved valuable. He suggested that the health officers should combine in a voluntary organization with the object of preventing disease in the masses of men wherever troops are about to be quartered. The result is that the health officers should be mobilized in war time. He is also consulted by the military authorities as to the means of obtaining the best sanitary conditions. He is also encouraged to visit the camps so as to advise regarding the removal of excreta and other matters.

THE USE OF VACCINES

Since the outbreak of war the Inoculation Department of St. Mary's Hospital has been busily occupied in preparing vaccines both for the British and the allied armies. It may be remembered that Sir Almroth Wright, whose appointment as consulting physician to the army in the field was announced in my last letter, is the director of this department. Nearly a million and a half doses of vaccine, representing approximately 166 gallons of fluid, have been produced. Not only antityphoid vaccine but also an "antiseptic vaccine" consisting of 500 million *Staphylococcus aureus* and 25 million *Streptococcus crysipelatis* in each dose of 0.5 c.c. has been produced. It is believed that this vaccine may be useful in cases of apprehended or incipient sepsis, while a smaller dose (0.05 c.c.) might be given when sepsis is established in the form of septicaemia. The department is also supplying the vaccine to the allied forces; 200,000 doses have been sent to the French army, 100,000 to the Belgian army, and the same number to the Russian army. Sir Almroth Wright has gone to the front with his assistant Dr. Fleming to observe whether or not these vaccines are being used to full advantage and consider the possibility of supplying other vaccines. Another member of the staff of the inoculation department will probably go to Galicia to obtain a culture

THE WOUNDED

The total number of beds in the auxiliary home hospitals amounts to 6,480. These hospitals are being served by between fifty and sixty voluntary aid detachments. Since the tide of war has turned in favor of the allies the number of British wounded arriving from the front has greatly diminished, but following the surrender of Antwerp and the evacuation of Ostend Belgian wounded are arriving in large numbers, and fully a thousand are distributed in the hospitals throughout England. There are also some French wounded. Many of the Belgians are suffering from diseases such as pleurisy, pneumonia and rheumatism induced by the hardships of war. It is pitiful to hear these brave people tell of the ruin and devastation of their country. They say: "Our fields are blackened, our homes destroyed, our loved ones murdered, taken prisoners or exiled. For years, perhaps decades, Belgium can be nothing more than it is now—a desert." The *Times* has raised a fund of two and a half million dollars for the purchase of motor ambulances to be used for the conveyance of wounded from the front and also received motor cars. It has thus been enabled to supply a fleet of 700 vehicles, which will be remembered that these are British Red Cross. It must be remembered that the Special provision is being made for the Army Medical Corps. The Admiralty has supplied six hospital ships each of about 6,000 tons displacement and accommodating 350 cases, including 100 special swinging cots for severe cases. In addition the generosity of the Indian princes will provide other ships. Accommodation for the Indian wounded has

University of Vienna Buildings Transformed into Hospital.—Particulars are at hand as to the transformation of the university buildings at Vienna and Breslau into large hospitals. Linoleum has been laid over wooden floors, partitions erected and recreation rooms changed into bathrooms, etc., so that the whole presents the appearance of a modern and well equipped hospital. A Fränkel is in charge at Vienna. To this hospital the wounded are transferred after they have been operated on or otherwise treated at the Hochenegg and Eiselsberg surgical clinics. Special arrangements have also been provided for treatment of outpatients. The university is paying the expense of this transformation of its buildings and of maintenance.

First-Aid Packet.—German physicians writing from the front comment with approval on the first-aid packets in use among the Germans. They are fastened in the front of the coat and are not carried in an inner pocket as the French soldiers carry theirs, so they are very accessible. The French packet is said to be hard to open and the dressing to be mostly absorbent cotton which is difficult to remove when the dressing is changed later, especially in case of jagged shrapnel or grenade wounds. The French also use lint to some extent. One physician mentions as a typical instance of what it can accomplish the absence of peritonitis in a case of extensive abdominal wound with protrusion of part of the liver. A comrade applied at once the first-aid dressing but the wounded man was obliged to stay where he fell until the second night and did not seem severely injured when he was brought in. Shrapnel wounds are said to suppurate in fully 85 per cent. of the cases.

Imported Drugs in Sweden.—According to *Hygica*, it has been impossible for dealers in drugs to get into communication with French drug firms so that all pharmaceuticals of French make are cut off. Representations have been made by the higher authorities to Germany asking that Sweden might be exempted from the prohibition of exportation of pure phenol, mercury, caffeine and the other drugs whose exportation was prohibited when the war broke out. But no exception is to be permitted in favor of Sweden. All pharmaceuticals which do not contain any of the prohibited substances can still be obtained freely from Germany. England has also prohibited the exportation of a long list of drugs, and it has been a difficult matter to obtain even the non-prohibited drugs and proprietaries from England. Switzerland has also decided not to allow the exportation of phenol, morphin and caffeine, pantopon, codein and arecolin. On the whole, *Hygica* concludes, physicians in Sweden will do well to be economical in the prescribing of drugs as it possibly may be difficult for the drug-stores to fill prescriptions calling for certain ingredients.

The Work of the American Hospital.—The work of the American Hospital in Paris has received great praise on account of its efficiency and adaptability to emergencies. Between August 12 and September 1, it converted the Lycee Pasteur at Neuilly into the American Ambulance of Paris, one of the best equipped war hospitals in Europe. In a fortnight the wing of the building was completed, operating theaters, anesthetizing and sterilizing rooms and a Roentgen-ray department installed and wards prepared. The American Colony in Paris is responsible for this work. The good work of the hospital is limited only by the amount of money subscribed for its support. It has at present 400 beds and desires to increase its capacity to 1,000. The cost of maintenance of the hospital is about \$2 per patient a day although the nurses and physicians serve without charge. The hospital asks a donation of one-half million dollars which will enable it to do the great work it desires and to the fullest extent. It is at present under the charge of Dr. Joseph Blake,

been provided at the great military hospital at Netley. Here use will be made of the Indian Field Ambulance, which consists of Indian students living in London, who some time ago, wishing to participate actively in the war, volunteered to form an ambulance corps. Another detachment has left for service on the hospital ships set apart for Indian soldiers. Comforts for the Indian soldiers in France are also receiving attention and their distribution is being arranged by Sir Havelock Charles, retired Surgeon-General of the Indian Medical Service, who has gone to France to study the problem. An institution known as the St. John Ambulance Association is proving of considerable service. In time of peace it trains men in ambulance work and arranges lectures and examinations by physicians. It has been in existence more than forty years and has issued certificates to a million persons; it was thus able to furnish trained orderlies to the army. For the first 4,000 vacancies in hospitals near the fighting line, at the base or in various parts of England and France it offered 20,000 volunteers. They are doing excellent work.

PARIS LETTER

PARIS, Oct. 15, 1914.

Military Surgery

Two papers of present-day interest on military surgery were read October 13 before the Académie de médecine. One by Dr. Picqué, surgeon of the hospitals of Paris, was on the subject of the preservation of limbs in cases of wounds of the soft parts and fractures of the diaphyses. Picqué is a strong partisan of conservative methods. According to him, at the front military surgeons ought to strive, first of all, to avoid infection of wounds. In the hospitals at the rear, it is necessary to consider patients of two classes: those with aseptic and those with septic wounds. For the first, abstention from operation and infrequent dressings give the best results. Abstention from operation is preferable also in cases of moderate infection. In serious infections, especially those due to shrapnel and fragments of shells, it is necessary to follow the rules of septic surgery and exercise daily surveillance. Amputation is necessary in scarcely any cases except those of total gangrene. Wounded soldiers are young men, generally without organic defects, and capable of undergoing a slow but regular convalescence.

Dr. Tuffier, surgeon of the hospitals and *agrégé* at the Faculté de médecine de Paris, described the workings of the military health service, which he was enabled to study from the firing-line of the Vosges to the hospitals of the rear. Tuffier gave moving testimony to the courage, endurance and technical skill of the surgeons at the front, who are performing their duty in a remarkable way under very perilous conditions. The hospitals near the fighting-line continually run the risk of abandonment if there is an advance and of capture if there is a retreat. Therefore, only extremely urgent operations are performed. According to Tuffier's personal experience, abdominal surgery is not possible under such circumstances. Tuffier declares that it is necessary to return to the antisepsis of Lucas-Championnière and to the drainage of Chassaignac and that the French method of conservation of the limbs ought to be adopted. Non-lacerating gunshot wounds heal with a single dressing. Shrapnel wounds and fractures are serious because they are often infected. Thoracic wounds, even when they traverse the thorax, heal easily. Abdominal wounds ought to be let alone where facilities for operating on them are lacking at the front. The wounded man is left seated without being fed until he arrives at the hospital of the second line. At the rear, treatment is in accordance with the particular case. A serious complication is tetanus, which should receive preventive treatment by injections of antitetanus serum. The future method of procedure is antitetanus serum applied on the battle-field, even before the first dressing. Among other serious complications it is necessary to reckon gaseous gangrene and acute septicemia, which are treated with hydrogen peroxid, scrupulous cleansing of the wounds and good drainage.

The trains for the removal of the wounded are necessarily freight trains. Tuffier estimates that these trains by themselves are capable, if necessary, of removing five hundred wounded men per train while the evacuation of several thousand wounded must be carried out in a night. Thus in spite of all the devotion of the staff, the progress of these trains is necessarily a real *via dolorosa*. The establishment of canteens and railway station first air by the press (THE JOURNAL, Oct. 24, 1914, p. 1492) is commendable.

Personal

Dr. Walther, surgeon of the hospitals of Paris, at present detached physician-major of the ambulances of the government of Paris, has become a candidate for the seat left vacant in the section of operative medicine of the Académie de médecine by the death of Professor Reclus (THE JOURNAL, Aug. 15, 1914, p. 592). The academy has decided, on the suggestion of its permanent secretary, that since several of the candidates are in the army, elections for the places now vacant or which may become vacant shall not be held until the end of hostilities.

List of the British Wounded

The British Red Cross is now establishing a list of the British wounded in the French hospitals or ambulances, either in Paris or in the provinces. Many British families are ignorant of the fate of members who, wounded and received into French hospitals or ambulances, may have been carried as "disappeared" on the lists of the war office.

The Evacuation and Transportation of the Wounded

The evacuation of the wounded continues to command the constant interest of the public and the war department. Before the battle of the Marne, in consequence of the retreat of our troops and the necessity of not allowing the wounded to fall into the hands of the enemy, and since the battle of the Marne, because of the increase of the number of the wounded, there has been some disturbance in transportation. Of late, however, an effort has been made to coordinate the various services. The minister of war has charged Dr. Paul Chavasse, medicine inspector-general of the military health service, with coordinating the general working and organization of the service of evacuations. He will also see to the provisioning of the armies with sanitary supplies.

The three societies which compose the French Red Cross have been invited by the military health service to send means of transportation to certain stations in Paris. The following are the arrangements made: The selection of the wounded is made on arrival of trains by the army physicians. The slightly wounded soldiers remain on the trains. Those whose condition, though not serious, requires new dressings but who are transportable, are kept in the ambulances of the station to be removed the next day. Those who are not considered capable of being transported are put in the care of the Red Cross and placed in hospitals.

The Disadvantages of Reduction of Flesh in Some Heart Cases

October 16, Dr. C. Fiessinger read a paper on this subject before the Académie de médecine. He showed that it is an error to say that an individual has the weight belonging to his height; he has the weight belonging to his nutritive regimen. Vitiating nutrition, before it produces organic lesions in many cases manufactures fat. The adipose tissue seems to act as a toxic reservoir. If the patient reduces his flesh, it may happen that the toxic substances resulting from defective nutrition may, since the fat no longer affords them lodgment, distribute themselves through the other tissues and give rise to various complications. The composition of a reducing diet rich in albuminoid substances plays a part in causing such complications. The milk-and-water diet with reduction of albuminoids and of total foods is sufficient, in certain patients, to produce a crisis of gout within the third or fourth day. The sole cause seems to be the setting free of toxic substances contained in the fat. Dr. Fiessinger has already published an observation on three women affected with serious cardiac complications of the menopause, whose troubles became ameliorated on increase of flesh. Nervous diseases act in the same way as cardiac complications. Every physician has observed in some women a cessation of troubles coincident with the increase of flesh of advancing years. The fat, imprisoning the toxic substances, arrests the morbid symptoms just as growing thin causes them by the release of the same substances.

Foundation of a Dental Prize

By a decree just published, the Académie de médecine has been authorized to accept a gift of 78,000 francs (\$15,600) from Drs. Julien Tellier and Francisque Martin of Lyons, the income of which is to be employed for a prize to be awarded triennially under the name of the *prix Claude Martin de Lyon*. The prize is to be awarded for manuscripts or printed works in French, by any authors whatsoever, on dental subjects (odontology, stomatology and buccofacial prosthesis).

Marriages

F. RAYMOND TAYLOR, M.D., High Point, N. C., to Miss Rachel E. Farlow of Guilford College, N. C., September 25.
OSCAR LEE McFAYDEN, M.D., Stedman, N. C., to Miss Pearl Bryant Jackson of Fayetteville, N. C., October 14.
ROWLEY SMITH FLAGG, M.D., Fairfax, Va., to Miss Pearl Gertrude Hulburd of Rutland, Vt., October 7.
TROY ADAM SPITLER, M.D., Carey, Ohio, to Miss Harriet Beck of Mount Blanchard, Ohio, recently.
WARREN WALLACE ST. JOHN, M.D., to Miss Grace Dorothea Staude, both of Troy, N. Y., October 5.
JOHN CARROLL WIGGINS, M.D., to Miss Ethel Follin, both of Winston-Salem, N. C., October 14.
PEARLIE WATSON LUTTERLOH, M.D., to Miss Grace Cole, both of Jonesboro, Ark., October 14.
CHARLES EDGAR BARKER, M.D., to Miss Viola Todd, both of Oklahoma City, Okla., October 7.
CARL ROBERT O'BRIEN, M.D., Boston, to Miss Lucille Teresa Cassidy of Bangor, Me., recently.
IRVIN HARRIS FARR, M.D., Holyoke, Mass., to Miss Ruby Beaching, at Holyoke, October 7.
BERT GEORGE WILCOX, M.D., to Miss Lillian Mine Bell, both of Joliet, Ill., October 14.
LAWRENCE GLENN GRIFFIS, M.D., to Miss Ruth Morris, both of Kalispell, Mont., October 7.
FELICIAN J. SLATAPER, M.D., to Miss Valbourg Berger, both of Houston, Texas, October 8.
LEVI H. SURBER, M.D., to Miss Dora M. Holladay, both of Indianola, Ia., October 7.
EMERY L. MEYERS, M.D., to Mrs. Ida Snow, both of Chico, Cal., October 8.

Deaths

Elias J. Beall, M.D. Tulane University, New Orleans, 1857; *ad eundem*, Missouri Medical College, St. Louis, 1876; Honorary, Missouri Medical College, 1880; a Confederate veteran with service as surgeon of the Fifteenth Texas Infantry and later as chief surgeon of General Walker's division; one of the organizers of the Fort Worth Medical College and for four years professor of the principles of surgery and president of the faculty; one of the founders of the Protestant Sanitarium, Fort Worth; died at his home in Fort Worth, October 20, aged 80. As a tribute to the memory of Dr. Beall, his portrait and a chair in the faculty room of the Fort Worth School of Medicine will be draped in mourning for thirty days. At a special meeting of the Tarrant County Medical Society, October 21, addresses eulogistic of Dr. Beall were made by several of the members and it was decided that the society as a body attend the funeral.
Samuel David Huntington, M.D. University of California, San Francisco, 1897; a captain of U. S. Volunteers during the Spanish-American War with service in the Philippine Islands; afterward a student of theology of Milwaukee; died in the Good Samaritan Hospital in that city, October 20, from the effects of a stab wound of the breast, self-inflicted as it is believed with suicidal intent, aged 45.
Harry Madison Jenkins, M.D. Starling-Ohio Medical College, Columbus, Ohio, 1908; a member of the Ohio State Medical Association; died in his office in Washington Court House, Ohio, October 16, from the effects of poison believed to have been self-administered with suicidal intent while mentally irresponsible, aged 34.
Arthur Scott Gilson, M.D. Medical School of Maine, Brunswick, 1894; a Fellow of the American Medical Association; surgeon to the Maine General Hospital and surgeon of the Board of Police Examiners, Portland; instructor in clinical surgery in the Maine Medical School; died at his home in Portland, October 9, aged 59.
Vaudois. Hedwood Handley, M.D. Kentucky School of Medicine, Louisville, 1889; formerly of Sturgis, Ky., and later of San Diego, Cal.; while visiting the ranch of his son in California, October 3, was kicked in the face by a mule and died eleven days later from tetanus in the Agnew Hospital, San Diego, aged 50.

DEATHS

1685

Gustav Burton Turner, M.D. Northwestern University, Chicago, 1912; a Fellow of the American Medical Association; formerly of Chicago, and an intern in St. Luke's Hospital; for a few months a resident of California; died in the Mount Zion Hospital, San Francisco, September 19, from diabetes, aged 27.
Walter G. Compton (license, Tennessee, 1889) a member of the Tennessee State Medical Association; died at his home in Westport, Tenn., October 22, from septicemia, aged 44.
Madison Monroe Holland, M.D. Vanderbilt University, Nashville, Tenn., 1884; died at his home in Statesboro, Ga., September 30, from cerebral hemorrhage, aged 54.
Velpau Jackson Ward, M.D. Medical College of Georgia, Augusta, 1888; formerly of Berlin, Ga.; died suddenly at his home in Blackshear, Ga., September 18, aged 47.
Thomas Madison Schooler, M.D. Baylor University, Dallas, Tex., 1901; formerly a practitioner of Oklahoma; died in his apartment at Fort Worth, Tex., October 10.
John W. Carico, M.D. Tulane University, New Orleans, 1888; a practitioner and druggist of Cloverdale, Cal.; died at his home in that city, October 8, aged 53.
Joseph Armand Charette, M.D. Laval University, Quebec, 1894; of Montreal; was caught under an overturned automobile on a street in East Bernstadt, Ky., was shot and killed October 5, 1894; of East Bernstadt, Ky., aged 45.
W. L. Barrett, M.D. Memphis Medical College, Memphis, Tenn., 1854; a Confederate veteran; died at his home in Covington, Tenn., October 9, aged 82.
Clement Chandler Larkin, M.D. University of Minnesota, Minn., September 3, aged 29.
Bruce Livingston Riordan, M.D. McGill University, Montreal, 1880; University of Toronto, 1889; died at Point Pleasant, Toronto, August 29, aged 55.
George Franklin Wise, M.D. Medico-Chirurgical College of Philadelphia, 1894; formerly of Jeddo, Pa.; died in Beaver Falls, Pa., July 11, aged 43.
Arthur C. Hanger, M.D. Missouri Medical College, St. Louis, 1886; died at his home in Cherry Box, Mo., October 13, from heart disease, aged 51.
Joseph Von Osinski (license, Indiana, 1897) for twenty years a practitioner of Indiana; died at his home in Laporte, Ind., September 30, aged 48.
Kenneth Laughlin Macleay, M.D. Dartmouth Medical College, Hannibal, N. H., 1885; died at his home in Laporte, Vt., August 17, aged 43.
Thomas Arthur Campbell, M.D. Tennessee Medical College, Nashville, 1903; died at his home in Newport, from nephritis, aged 33.
William L. Turk, M.D. University of Tennessee, Nashville, 1892; of Gallion, Ala.; died in an infirmary in Selma, Ala., September 29, aged 48.
James Bacon Ware, M.D. University of Pennsylvania, Philadelphia, 1854; died at his home in Bridgeton, N. J., September 7, aged 83.
Minyard T. Colvin, M.D. University of Tennessee, Nashville, 1890; died at his home in Luttrell, Tenn., about September 30, aged 62.
Louis Charles Philippe Massicotte, M.D. Bennett Medical College, Chicago, 1890; of Keene, N. H.; died last month in Montreal, aged 56.
John Henry Kelley, M.D. Bellevue Hospital Medical College, 1875; died at his home in Parkersburg, W. Va., September 8, aged 61.
Calvin Shaw, M.D. Trinity Medical College, Toronto, 1898; died at his home in Cleveland, Ohio, October 12, from typhoid fever, aged 46.
Archibald Dunn Walker, M.D. Queens' University, Kingston, Ont., 1888; died at his home in Riverside, Cal., August 9, aged 49.
James L. Short, M.D. Hahnemann Medical College, Chicago, 1885; died at his home in Abilene, Kan., October 6, aged 75.
John McMillan Shaw, M.D. Queen's University, Kingston, Ont., 1886; died at his home in Lansdowne, Ont., September 22.
Alphonso Harris, M.D. Missouri Medical College, St. Louis, 1880; died at his home in Dallas, Tex., October 8, aged 67.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

ECKMAN'S ALTERATIVE

A Consumption Cure Fraud Uses a Philadelphia Newspaper as an Advertising Asset

Eckman's Alterative is a fraudulent consumption cure. It was exposed in *THE JOURNAL*, April 27, 1912. At that time an analysis of the preparation made in the Association's laboratory was published showing that it consisted, essentially, of alcohol, calcium chlorid and cloves. The only reason for giving further publicity to this cruel fraud is the fact that the Eckman concern is now running a series of advertisements, in which the impression is given that the medical profession, through *THE JOURNAL* and other medical publications, has endorsed Eckman's Alterative. The advertisements consist largely of quotations regarding the use of calcium (lime) in tuberculosis. By inference the reader is led to believe that wherever the use of calcium in the treatment of tuberculosis has been suggested by physicians, Eckman's Alterative has been endorsed. Nothing, of course, could be further from the truth.

The advertising of Eckman's Alterative has undergone the same change that has taken place in most medical advertising during the past two or three years. The "lie direct" has given place to the "lie with circumstance"; the outspoken falsehood has given place to the indirect falsehood; the definite statement that Eckman's Alterative will "cure consumption" has given place to inferential claims that mean the same thing; the word "consumption" has in many instances been eliminated from the advertising "copy," but other words have been substituted, which to the sufferer from consumption, mean exactly the same. Actually, the advertisements to-day are more dangerous than they were when their very outspoken falsity repelled a certain portion of the thinking public.

The various articles from this and other medical journals which the Eckman concern quote inferentially as references in favor of their cruel nostrum, have in fact nothing whatever to do in the remotest way with Eckman's Alterative. That calcium may have some value in the treatment of tuberculosis may be admitted. There are several drugs that may be given in selected cases of tuberculosis with some benefit, provided always that they are prescribed in accordance with the needs of the individual patient and provided further that the patient is warned at the time that the drugs are merely an incident. For here lies one of the strongest objections to all drugs sold as cures for consumption. The real treatment of pulmonary tuberculosis consists in painstaking and conscientious attention to the hygienic and dietetic rules laid down for the individual case. Every physician who has treated cases of consumption and every visiting nurse who comes in contact with such cases, knows that the hardest task in the treatment of this disease is to make the patient realize that drugs hold out no hope for cure but that reliance must be placed on other measures.

The average person believes, unfortunately, that any disease can be cured by taking something out of a bottle—if only one knows just what to take. On this fallacy is built up the vast superstructure of fraud in the exploitation of consumption cures and cancer cures. It is not always pleasant nor easy for the consumptive to so change his method of living as to stand some chance of recovering. It is so easy, comparatively, to buy a bottle of medicine and take the stuff three or four times a day in the belief that it will cure the disease. Here lies the great danger in the use of every consumption cure, whether it is sold as a consumption cure or as a "remedy" for "serious lung trouble" to quote from one of the later advertisements put out by the Eckman concern.

In addition to the advertisements appearing in newspapers, the Eckman Manufacturing Company publishes the full series of advertisements in booklet form and emphasizes that "these advertisements are appearing in the *Philadelphia North American* and other leading newspapers through the United States." The *Philadelphia North American*, which stands for high ideals in its editorial columns, is participating in the profits of an inhuman fraud when it accepts advertising contracts from the Eckman consumption cure.

Summed up the case against Eckman's Alterative is this:

1. It is sold as a cure for consumption, which it is not. In other words, it is a fraud.
2. It is sold under the claim that it contains no "narcotics or habit-forming drugs." Alcohol is both narcotic and habit-forming.
3. Its purchase means the use of money that frequently can be ill afforded and which should go into wholesome food and rational treatment.
4. Its use means that the consumptive is led to rely on a perfectly useless nostrum and to neglect the very things which offer him the only hope.
5. To claim that, because lime is sometimes used in the treatment of tuberculosis, therefore a preparation containing lime is a cure for consumption, is as illogical as it is cruel.

"AN APOLOGIST FOR PATENT MEDICINES"

Detroit Saturday Night Replies to the Specious Arguments of a Nostrum Exploiter

The article which follows is taken in full from *Detroit Saturday Night*, a virile weekly that expresses itself in no uncertain tones against medical and other frauds. The article, which appeared October 10, is by Jacob Nathan, the business editor of *Saturday Night*:

Carl J. Balliett, of the Foster-Milburn Co. of Buffalo, spoke before the Advertising Affiliation at its Detroit meeting last Saturday, taking for his theme:

"Granted that all honest business men tell the truth in their advertising, is it right for any publisher to close his columns to the advertising of any large line of business because there are some liars in it?"

That this theme may be better understood let it here be said that Mr. Balliett represents a line of business in which there are more liars than in any other avocation or profession in the world—the patent medicine business, or as Mr. Balliett prefers to call it, the manufacture and sale of proprietary medicines.

It will somewhat illumine the theme also if it be known that Mr. Balliett's company manufactures Doan's Kidney Pills, of which the American Medical Association says:

"Doan's Kidney Pills, or as they are sold in the British market, 'Doan's Backache Kidney Pills,' are in this country sold as a 'remedy'; in Great Britain they are a 'specific.' The difference is that between truth and falsehood. The British label also differs from the American label in having a larger list of diseased conditions for which the nostrum is recommended. * * * Doan's Kidney Pills are a fraud and a dangerous fraud. While they are advertised to 'cure all kidney ills,' the assertion is a false one. While they are said to be a 'simple vegetable remedy,' the analysis contradicts this."

Be it also known that Doan's Kidney Pills advertising has been thrown out of the columns of a number of American newspapers—several times as many numerically, as Mr. Balliett admitted to the ad-crafters. Hence Mr. Balliett's theme, because he insists the Foster-Milburn Co. should not be classed among the liars in the proprietary medicine business.

Mr. Balliett made the point that no medicine should be condemned until it had been tried, even advising the ad-men to be lenient with dear old Lydia Pinkham until they had personally and individually proved her remedies fraudulent.

We do not presume to say that Mr. Balliett paid his respects to the American Medical Association in the manner he did because of its little treatise on his kidney pill, but he did so in precisely the same temper that quacks and fakers usually display toward the medical profession. Declaring that there is \$160,000,000 worth of proprietary medicines sold in this country annually, he declared that if you would divide that amount by the number of practicing physicians you would find that it meant an average of \$2,000 out of the pockets of the medicine men. This, he inferred, was the motive of the American Medical Association in denouncing patent medicines.

Correspondence

And we wonder, too, if what Dr. Harvey W. Wiley had to say about Doan's Kidney Pills in the September *Good Housekeeping* had anything to do with Mr. Balliett's expressed contempt for the celebrated chemist and food and drug expert. Speaking of kidney cures in general, Dr. Wiley said:

"A very dangerous class of remedies are the kidney cures. For the most part they depend on potassium nitrate, just as the rheumatism cures fall back on salicylic acid and a cathartic. Warner's Safe Remedy is anything but safe if such a dangerous disease as Bright's disease is making progress while you neglect diet and hygienic living, to take this mixture of 'potassium nitrate, alcohol, glycerin, a trace of oil of wintergreen and vegetable extractive,' possibly taraxacum. The exact composition of these mixtures containing very small amounts of many different products cannot be determined, but this analysis indicates the character of the alleged cure, and potassium nitrate, its main ingredient, could hardly be called a 'vegetable material.' Like many other drugs, it has most undesirable side effects, and its miscellaneous ingestion in this way may be vicious in itself, besides the fact that loss of time in diabetes and Bright's disease may prove fatal. Doan's Kidney Pills belong in the same category, and depend also mainly upon potassium nitrate, with fenugreek, oil of juniper, and hemlock pitch for their effect. Think how the sales would fall off if all of these 'safe cures' and 'sure things' were sold for what they are, with a formula on the bottle; and a true statement as to their efficiency."

Of course Mr. Balliett doesn't like the American Medical Association. He doesn't like the newspapers that refuse to accept medicine advertising. He does not like Dr. Wiley or any other agency or person that is endeavoring to persuade the public not to purchase Doan's Kidney Pills. And because he doesn't like them it is only natural that he should speak as he did before the ad-crafters. So far as the newspapers that have eliminated medicine advertising are concerned, they took that course as a means of protecting the public against what Samuel Hopkins Adams has termed "The Great American Fraud."

"A NEW PHYLACOGEN"

A large number of so-called "independent" journals are carrying a "reading notice" announcing a new phylacogen for typhoid fever put out by Parke, Davis & Co. Commenting on this the *Wisconsin Medical Journal*, in its issue for October, 1914, says:

"When commercial greed is locking horns with scientific facts and wishes to prove its case scientifically it seems easy to collect much so-called proof. Reports of several hundred cases successfully treated by several hundred physicians impress certain minds as having the same weight in evidence as fifty cases treated by one man with all the necessary controls. Verily judgment is difficult.

"The very latest style in therapeutics is Typhoid Phylacogen featured in *Therapeutic Notes*, September, 1914. This preparation consists of a culture filtrate of the *Bacillus Typhosus*, combined with an equal volume of the *Bacillus Typhosus*. 'Reports of several hundred cases successfully treated by several hundred physicians impress certain minds as having the same weight in evidence as fifty cases treated by one man with all the necessary controls. Verily judgment is difficult.' This is recommended subcutaneously or intravenously. It is well to remember that basic phylacogen is composed of the filtrates from the growth of five or six bacilli, such as colon, staphylococci, streptococci, etc. Now to get down to actual facts, we have known for a long time that the typhoid bacillus produces a specific toxin only when the bodies of the bacilli are crushed. An enormous amount of work has been done in an endeavor to produce a typhoid toxin in a bouillon culture which will cause immunity in injected animals. It has never been done. One does, however, get protein toxins which are not specific for typhoid infection, that is to say these toxins cannot produce immunity to typhoid infection.

"If physicians are to be instructed in modern therapeutics by sales agents of commercial firms then it seems time for us to close up our medical schools and send the students to school in drug and serum manufacturing houses."

The Reaction of the Normal Organism on the Environment.

—If we contrast an ordinary developing child with one which is "backward," we will often notice that it is in initiative that the latter is primarily and fundamentally lacking; it is not so much that he has not got a brain as that he objects to use it. Whereas the healthy child will constantly, of his own accord, seek out new problems, and attempt zealously to master them, the defective child can only be induced to do so by extremely tactful handling and plodding perseverance on the part of the parent or teacher, failing such intelligently directed environmental stimulus, he may be allowed to remain all his life practically at the stage of infancy, although in all likelihood possessed of the capabilities of very much further, if perhaps not of complete, development.—Arthur J. Brock, *Edinburgh Med. Jour.*

Health Insurance and the Medical Profession

To the Editor:—To obtain the services of the medical profession for the benefit of the sick of the poorer classes has been the object of many a philanthropic movement. The free clinic, the public ward or the free hospital, all expressions of philanthropy, are made possible by securing the free services of medical men. The fraternal societies, as we know them to-day, are an indication on the part of the masses that they would prefer to pay their own way if such were possible. In Great Britain the matter has been thought sufficiently important for a government to make it the subject of important legislation. All we lack in either the United States or Canada is the right type of politician and it will be made a subject of legislation on this side of the Atlantic.

The free clinic and all similar charitable institutions are made possible by exploiting the medical profession in the name either of charity or of religion. In Great Britain, Mr. Lloyd-George has been gracious enough to exploit the profession in the name of politics.

Our profession has made great progress in all the sciences pertaining to the healing art, but our methods of giving services and receiving our fees have remained unchanged for generations. A portion of the public pays us a large fee, another portion a small fee and a third portion nothing at all. It is estimated that 33 per cent. of the urban population of Great Britain was affected by the national insurance act. In this country the percentage of population of any fair-sized city seeking medical aid through the free clinic, the public hospital service, the fraternal society contract physician or the general practitioner's charity list is placed by many men as fairly high—some say as high as 50 per cent.; scarcely ever do I find it put as low as 25 per cent., so that I believe legislation similar to the national insurance act of Great Britain introduced into either Canada or the United States will affect as large a proportion of the population in either country on this side of the Atlantic. In other words, the profession gets to-day nothing for 33 per cent. of its work—for work that is worth more to the public than it ever has been before, in a time when the average medical income is on the decrease and the cost of living on the increase. We are living in an age when the "gold standard" determines one's standing in society. Mr. Aloes from Pill Castle, who has made a fortune out of his knowledge of human nature and drives a limousine, who scarcely makes a living out of his knowledge of medicine and rides around in his little roadster. The day is past when the doctor is respected because of his profession alone, and most of us are guilty of valuing our practices by our cash receipts for the year. Therefore, to be consistent, we should welcome some method of converting this 33 per cent. loss into a paying proposition.

It is obvious that there is something missing in our present-day civilization and that before society will be satisfied the services of the medical profession must be at the disposal of rich and poor alike. The national insurance act of Great Britain was introduced to fit in between the medical profession and the public, although in its proper place it has been found inefficient and unsatisfactory and is a fair example of how any question will be solved by commencing at the wrong end. If we as a profession can do anything to prevent the introduction of such an act into this country there is no time like the present. A national medical service has been suggested by some as the best solution. I can see only two objections to this myself, namely, that a number of things already under national control are not managed with that degree of fairness that would tempt us to place our destinies in the hands of politicians, and that the change from our present status would be too great. Reforms come slowly, and to be at all permanent must be introduced step by step, and are living in a commercial age and I believe our solution will be found by adopting commercial methods.

The business way of guaranteeing a man's loss through fire is by fire insurance, and the business way of guaranteeing man's loss through ill health should be health insurance. I

believe that by analyzing insurance methods we shall ultimately arrive at a solution that will be satisfactory to both public and profession. By accepting the good points of present insurance methods and supplying what is lacking to make it acceptable to the medical profession, we arrive at a scheme to guarantee the insured public the payment of their medical, surgical and hospital bills on the one hand, and guarantee the medical profession payment of their fees on the other hand. In working out any scheme of insurance on these lines if the following four points are adhered to it should be acceptable to the medical profession:

1. The services of the whole of the medical profession should be at the disposal of the whole of the public.
2. No one should be made the object of charity.
3. The average income of the medical practitioners should be increased.
4. The basis from which the actuary must do his reckoning should be the schedule of medical fees.

This should sufficiently protect the medical practitioners and should be sufficient guarantee to the public.

Any insurance scheme which has for its object the securing of medical attention for the masses depends for its successful working on the judgment of medical men, and should, therefore, as much as possible remain under medical control. If the thing depends on our judgment for its successful working, we should be rewarded.

This is, perhaps, the largest problem that the younger members of the medical profession will have to solve in their day and generation. It is worth every man's while studying, and as I am not through studying it myself I shall be glad to communicate with those members of the profession who are interested, and shall make their questions and objections the subject of a second paper on this question at a later date.

A. R. MUNROE, M.D., Edmonton, Alta.

The Office-Boy Perineum Operation

To the Editor:—In THE JOURNAL, May 18, 1912, I published a description of a perineal operation. The chief technical point consists in stabbing a pair of scissors down to a part of the levator ani muscle, opening the scissors *in situ* and thus stripping the muscle free from attachments. This leaves it in condition for accurate suturing and restoration of the most important part of the elastic floor.

This peculiar step in technic simplifies the operation to such an extent that I have spoken of the whole operation as the "office-boy perineum operation," because the office-boy could do it after obtaining one object lesson.

A number of other surgeons are at present claiming priority for this technical step in question. I do not know who first employed it. As it is to become a matter of history, perhaps it may be well to state that I have taught this step in technic since 1895. I have letters from members of the visiting staff of five different hospitals with which I am connected in the way of documentary evidence. My object in furnishing this evidence is not for the purpose of establishing a priority claim, but to protect myself against the charge that some one's else step in technic has been appropriated by me and published without reference to some earlier operator.

ROBERT T. MORRIS, M.D., New York.

Help Asked for American Hospital in Paris

To the Editor:—The following letter was recently received by me in regard to the American Hospital in Paris. The writer is Mr. Charles H. Mower, who has been a prominent member of the American Colony in London for the last twenty-five years. Should any of your readers care to subscribe to this good cause, I shall be pleased to receive and forward any sums, which will be duly acknowledged if sent to me at 279 Marlboro Street, Boston, Mass.

WALTER G. CHASE, M.D.

While in Paris, and particularly since the war, I became very much interested in the work of the American Hospital. The good work of the Hospital seems only to be limited by the amount of money which they

are able to get subscribed for carrying it on. If they get sufficient money they will be able to increase their present capacity from 400 to 1,000 beds. I am informed by the Chairman of the Board of Managers, Monahan, that the cost of running the hospital per bed is 10 francs a day, in spite of the fact that all of the doctors and nurses are volunteering their services free. Their staff of doctors, nurses, cooks and other servants number already 200, all of whom have to be fed. The heating alone consumes about 12 tons of coal per month, costing about £300. They require about half a million dollars, as they contemplate being able to take care of 1,200 beds. The Hospital is entirely under American control, and is being financed by Americans, and it appeals to me very strongly because of its magnificent equipment and also, that being so near the seat of war it undoubtedly will receive many of the most serious cases, which cannot bear longer transportation.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted on request.

PLACE FOR A REST CURE

To the Editor:—I have a patient who is in a general run-down condition, and I wish to find a place where she can get care, proper diet and quiet, attractive surroundings. I should prefer some place in the South among the hills and mountains; among forests, where the climate is not too rigorous for the delicate woman to be out of doors, and yet where it is not too enervating, as it is in some parts of the South. I prefer a small place, providing she could get proper medical attention in such a place. One where tuberculosis or mental disorders are treated would not be satisfactory.

W. A. V., Jr.

ANSWER.—We shall be glad to forward information regarding such place or institution.

STATES WHICH REQUIRE PROPHYLACTIC FOR OPHTHALMIA NEONATORUM

To the Editor:—What states have laws requiring the use of silver nitrate in the eyes of the new-born?

A. B. M., Waycross, Ga.

ANSWER.—The following states have either laws or regulations for the prevention of ophthalmia neonatorum: Connecticut, District of Columbia, Idaho, Illinois, Iowa, Indiana, Kansas, Louisiana, Maryland, Maine, Massachusetts, Michigan, Minnesota, Missouri, Nebraska, New Hampshire, New Jersey, New York, North Dakota, Ohio, Oregon, Pennsylvania, Porto Rico, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Washington and Wisconsin.

The law does not in all of these states specifically designate the kind of preparation to be used, the state boards of health being authorized either by direct mandate or by implication to determine this point.

The following states by law require the use of some form of prophylactic for ophthalmia neonatorum: Indiana, Louisiana, Maryland, Massachusetts, Missouri, New Jersey, New York, Vermont and Wisconsin.

In the following states the boards of health by regulation have authorized the use of silver nitrate: District of Columbia, Minnesota, Nebraska, New York, Porto Rico, Rhode Island, Utah and Washington.

TYPHOID VACCINATION AND IMMUNITY

To the Editor:—1. Does one attack of typhoid render a person immune? If so, for how long?

2. Is it advisable to vaccinate a child under 5 years of age for typhoid when moving to a typhoid locality?

3. Please give the procedure in administering the vaccine.

P. R. BRENTON, M.D., Tacoma, Wash.

ANSWER.—1. An attack of typhoid may leave a certain degree of immunity; how long this lasts is not known.

2. Vaccination of children against typhoid seems to have given good results and is advisable in the conditions mentioned.

3. Typhoid vaccine is administered hypodermically under aseptic conditions. The site of the inoculation should be sterilized by the application of tincture of iodine and the vaccine injected from a sterile syringe. The inoculation is usually made in three doses, the first consisting of 500 million killed bacteria. The second dose of 1,000 million bacteria is given after an interval of from a week to ten days and the third dose of 1,000 million after a similar interval.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ARKANSAS: Little Rock, November 10-11. Sec., Dr. W. S. Stewart, 404 Citizens Bank Bldg., Pine Bluff. Homeopathic, Little Rock, November 12. Sec., Dr. Scott C. Rannels, 900 Scott St., Little Rock. Eclectic, Little Rock, November 10-11. Sec., Dr. C. E. Laws, Ft. Smith.

CALIFORNIA: Los Angeles, December 8. Sec., Dr. Charles B. Pinkham, 727 Butler Bldg., San Francisco.

CONNECTICUT: New Haven, November 10-11. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven. Homeopathic, New Haven, November 10. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven. Eclectic, New Haven, November 10. Sec., Dr. T. S. Hodge, 19 Main St., Torrington.

DELAWARE: Dover and Wilmington, December 8-10. Sec., Dr. H. W. Briggs, 1026 Jackson St., Wilmington.

FLORIDA: Palatka, December 2-3. Sec., Dr. E. W. Warren, 102 Front St., Palatka.

KENTUCKY: Louisville, December 16-18. Sec., Dr. A. T. McCormack, Bowling Green.

MAINE: Portland, November 10-11. Sec. Dr. Frank W. Searle, 776 Congress St., Portland.

MARYLAND: Baltimore, December 8. Sec., Dr. J. McP. Scott, 137 W. Washington St., Hagerstown. Homeopathic, Baltimore, December 15-16. Sec., Dr. O. N. Duvall, 1817 N. Fulton, Baltimore.

NEBRASKA: Lincoln, November 11-12. Sec., Dr. H. B. Cummins, Seward.

OHIO: Columbus, December 8-10. Sec., Dr. George H. Matson.

PENNSYLVANIA: Philadelphia, December 1-3. Sec., Dr. N. C. Schaeffer, Harrisburg.

SOUTH CAROLINA: Columbia, November 9. Sec., Dr. A. Earle Booser, 1806 Hampton St., Columbia.

TEXAS: Waco, November 10-12. Sec., Dr. W. L. Crosthwait, Amicable Bldg., Waco.

VIRGINIA: Richmond, December 15-18. Sec., Dr. J. N. Barney, Fredericksburg.

Washington July Report

Dr. C. N. Suttner, secretary of the Washington State Board of Medical Examiners, reports the written examination held at Seattle, July 7-10, 1914. The total number of subjects examined in was 11; total number of questions asked, 110; percentage required to pass, 75. The total number of candidates examined was 70, of whom 64 passed, including 9 osteopaths; and 6 failed, including 2 osteopaths. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
California Eclectic Medical College.....	(1914)	85.4	91.5
Coll. of Phys. and Surg., San Francisco.....	(1902)	85.4	81.1
University of Colorado	(1913)	83.4	86.4
Chicago College of Med. and Surg.....	(1911)		96.3
College of Phys. and Surgs., Chicago.....	(1907)		76.5
Illinois Medical College.....	(1910)		77.8
Northwestern University	(1914)		92.2
Rush Medical College, (1899) 77.9; (1902) 75.3; (1913) 80.4, 87.1, 92.5; (1914) 75.			
University of Illinois	(1914)		85.7
State University of Iowa, Coll. of Med.....	(1907)		81.7
Louisville Medical College.....	(1907)		77.4
University of Louisville	(1914)		83.2
College of Phys. and Surgs., Baltimore.....	(1905)		78.2
Johns Hopkins University	(1913)		85.8
University of Maryland	(1908)		77.4
Harvard University	(1912)		86.4
Detroit College of Medicine	(1912)		75
University of Minnesota, Coll. of Med. and Surg., (1905) 93.2; (1911) 89.4.			
St. Louis University	(1913) 88.4; 90.2; (1914) 83, 90.6		
University Med. Coll., Kansas City, (1896) 81.1; (1904) 84.4; (1910) 80.			
Washington University	(1913)		94.2
Omaha University	(1898)		88.4
Bellevue Hospital Medical College.....	(1898)		85.4
Columbia University, Coll. of Phys. and Surgs.....	(1911)		92.3
Eclectic Medical College, Cincinnati	(1911)		75
University of Oregon	(1914) 82.4, 87.1, 87.7, 88.1, 92.4		
Willamette University	(1889)		86.9
Jefferson Medical College.....	(1913) 80.6; (1914)		91
University of Pennsylvania	(1910) 92.3; (1914)		90
Medical College of the State of South Carolina.....	(1892)		92.9
University of Tennessee	(1912)		75
Vanderbilt University	(1911)		91.5
Manitoba Medical College, Winnipeg	(1914)		81.8
McGill University, Quebec	(1905) 82.2; (1914)		79.8
University of Helsinki, Russia	(1913)		81.8
College	FAILED	Year Grad.	Failed
Northwestern University	(1894)		1
Johns Hopkins University	(1913)		1
Wisconsin College of Physicians and Surgeons	(1902)		1
Royal Medical College, Stockholm, Sweden.....	(1899)		1*

* Withdrew.

Book Notices

ARTERIOSCLEROSIS: A CONSIDERATION OF THE PROLONGATION OF LIFE AND EFFICIENCY AFTER FORTY. By Louis Faugeres Bishop, A.M., M.D., Clinical Professor of Heart and Circulatory Diseases, Fordham University, School of Medicine, New York. Cloth. Price, \$3.50. Pp., 383, with illustrations. New York: Oxford University Press, 1914.

Unfortunately this book does not seem to discuss this most important subject clearly; or neither does it inform the reader as to what is really known about it to-day. This book is a plea for the author's theory that arteriosclerosis is caused by eating habitually many proteins and large quantities and that it can be prevented or mitigated by a "few-protein" diet. By "few-protein" he means a diet, the proteins of which are derived from a single source and not as ordinarily from many sources simultaneously as from meat, fish, fowl, eggs, milk and vegetables.

The following quotations from various parts of the book will make clear his leading idea:

The key to the riddle of arteriosclerosis I believe lies in just this sensitization of individuals to particular proteins, or to be more specific, to split products of particular proteins.

The truth is not all found in popular explanations with such trite names as intestinal putrefaction, but is found in the ultimate destination of food substances and their relation to the cells.

Arteriosclerosis seems to me often to develop as a result of damage done by some material derived from food to which the tissues are idiosyncratic. The damage often comes about gradually without disagreeable symptoms. The substances at fault are in all probability split products derived from the breaking down in the intestines of nitrogenous food derived from eggs, fish, meat and soups. Which of these foods supply the product doing the damage can only be determined by experiment with the individual under observation.

The individual eating the great variety of protein foods found in a modern dietary is laying himself open to the attack of many different kinds of amino-acids and other split products, any one of which may be the one which is to do him harm. If he cuts out one-half of his proteins, he is by that much safer. If he is willing to do with a single protein, he is almost certain, on the theory of chances, to escape that which will do him damage.

The author admits that a "low-protein" diet or small quantity of protein does good, but believes that his "few-protein" diet is more certain to do good. He denies that the action of microbes on protein produces the toxin which causes the lesion of arteriosclerosis, or at least denies that it usually does so. But he advances no proof that his theory that it is some protein or amino-acid made from it which does, unless the statement that "on practical grounds, the few-protein diet is to be recommended because it is successful," can be regarded as proof. The author has not digested and assimilated and built his theories and practice on such modern knowledge as that during digestion all proteins are split into amino-acids and absorbed into the blood as such, and that some proteins contain all the kinds of amino-acids needed for the maintenance of tissue health and that others are lacking in one or another which is necessary. Nor does he seem to realize that proteins are from the physiologic point of view very complex and that what he calls a "few-protein diet" affords many amino-acids to the individual who eats it; sometimes more kinds than might be obtained from a mixture of certain proteins. Fortunately the proteins of milk which he urges as the best "few-protein" food for the relief and prevention of arteriosclerosis contain all of the needed amino-acids. He is most diffuse in his style. Almost every chapter contains digressions from its subject and often long and wearisome ones. The important chapter on the chemistry of the proteins contains fewest digressions, for little of it is written by the author. Six pages are quoted from Cathcart. Fourteen pages are quoted from Underhill. There is a scant page in all written by the author, welding these quotations together. The book contains reproductions of roentgenograms and polygraph tracings. Some of the latter are poor. If a reader will pick out the author's practical suggestions for treatment he will obtain useful ones; though his theoretical explanation of the mode of action of the treatment which he advises is most doubtful. The key to treatment is a simple diet, small or moderate in quantity, in which cheese is substituted for other protein food (vegetable proteins he regards as harmless) and regular, free catharsis, preferably by oleum ricini. He condemns salines as harmful.

MEDICAL GYNECOLOGY. By Samuel Wyllis Bandler, M.D., Adjunct Professor of Diseases of Women, New York Post-Graduate School and Hospital. Third Edition. Cloth. Price, \$5 net. Pp., 790, with 150 illustrations. Philadelphia: W. B. Saunders Company, 1914.

In preparing this well-known volume for its third edition the author has undertaken a thorough revision of the entire field covered by the subject matter. In its general arrangement there is no material change, the classification being at first clinical, according to symptoms, and second, pathologic, according to local or general disease processes. The various topics are viewed from the points of view of the symptoms, the disease, the bimanual and microscopic findings, and the general physical and nervous state. Thus there is presented a brief but comprehensive summary of the topic under discussion, followed by a more exhaustive consideration of the conservative treatment, operative procedures having been viewed as a last resort. The relation which pelvic abnormalities bear to the physical and mental state of the woman is constantly borne in mind, so that diagnosis and therapeutic method is not limited to the female pelvis. This is nowhere better demonstrated than in the new chapter devoted to the consideration of the internal secretions. Here in the space of fifty-three pages the reader finds a concise presentation of this vast and complex subject. The relation of the various glands producing internal secretions to pathologic and normal states in women has been considered in accordance with the most recent research of the various German investigators as well as the work of Cushing on the pituitary body. Certainly no more fitting place for the discussion of these questions can be found than in a volume dealing with medical gynecology. In this respect the author has brought his subject matter up to date and produced a work of definite value to the physician and to the student of gynecology.

NERVÖS. ZWANZIG GESPRÄCHE ZWISCHEN ARZT UND PATIENT. Von Dr. Ludwig Scholz, Direktor A. D. der Provinzial-Irrenanstalt in Kotten. Paper. Price, 4 marks. Pp., 188. Berlin: S. Karger, 1914.

In twenty short chapters, so-called conversations, the author popularizes the entire subject of psychotherapy, beginning with the definition of nervousness and ending with a philosophy of life. He handles his theme in the form of questions and answers, the patient asking the question, the physician answering. The author assumes for the patient a great deal more intelligence than we can actually credit him with. However, it must be admitted that the German patient is usually intelligent and capable of following a line of abstract reasoning. The book may be put down as a compend of Dubois' psychotherapeutic views, explained in the form of questions and answers. The brochure can safely be placed in the hands of those German-speaking neurasthenics and hysterics who possess the necessary intelligence to follow the author.

PSYCHOLOGY IN DAILY LIFE. By Carl Emil Seashore, Professor of Psychology in the State University of Iowa. Cloth. Price, \$1.50 net. Pp., 226, with 17 illustrations. New York: D. Appleton & Co., 1914.

This volume is in the Conduct of Mind Series, which aims to supply a foundation for the practical application of psychology. The more didactic chapters are introduced by essays on play, serviceable memory and mental efficiency, considered from the point of view of mental health. Then mental laws are discussed, and are shown to explain the phenomena of illusions. In this section there are various entertaining diagrams. Laboratory methods are shown as applied to the measurement of musical ability. The subjects are selected merely for their illustrative value and are not meant to cover the entire field. The book reveals the practical use which may be made of psychology in everyday life, and gives some excellent suggestions.

SCRAPS. By A. G. Field, M.D., LL.B. Cloth. Pp., 88. Des Moines: Welch Printing Company, 1914.

In this book Dr. A. G. Field has compiled various papers, addresses, etc., published by him during a long period of human service. It is a reminder that many physicians daily are silently and conscientiously serving their fellow men in wide fields of endeavor.

Miscellany

Public Health Service Report on Friedmann Treatment

When, two years ago, Friedmann announced the discovery of a new treatment for tuberculosis, the immense publicity given to the announcement prompted the Public Health Service to appoint a committee to investigate the claims of the alleged cure. A board consisting of Surgeon John F. Anderson, director of the Hygienic Laboratory as chairman, and Past Assistant Surgeon A. M. Stimson of the Hygienic Laboratory as recorder, was appointed for this purpose. It will be remembered that some difficulty was experienced in securing the entire cooperation of Dr. Friedmann and that in the *Public Health Reports* of May 16, 1913, a progress report was published which said, "Without presenting in detail the condition of patients under observation, we are in a position to state that the effects so far observed do not justify that confidence in the remedy which has been inspired by widespread publicity." The board of investigation has now presented its final report containing the results of both clinical observation and laboratory experiments. Clinically the board observed the treatment of ninety-four cases. A number of the patients belonged to the third stage according to the Turban method of classification, but many of these third-stage cases were in excellent general condition, without fever, of good body weight with little cough and expectoration, and stationary or very slowly progressive lesions. Dr. Friedmann was disposed to criticize this material, although his published papers warranted the expectation of cure in similar cases. On the other hand, Dr. Friedmann refused cases of the first stage on the ground that since they were already doing well, the beneficial effects of the treatment would not be as apparent as in those having more pronounced symptoms. In the report, abstracts of the histories of the cases are given which show, generally, no particular change in condition except such as might be expected for cases of pulmonary tuberculosis under ordinary methods of treatment. Anderson and Stimson note two classes of exceptions. They state that good results have been reported in some cases. It is explained that by this is meant simply that "the improvement noted was of such degree as is not commonly observed in the general run of cases. In no single case was this improvement such that it could not be paralleled in the experience of any physician having extensive acquaintance with tuberculosis." In other cases the record shows that the results were bad. The investigators say

"By 'result unusually bad' we mean that the course of the disease following treatment was distinctly worse than would be expected in the general run of cases. Here again we must concede that no single case taken by itself would be unparalleled in an extensive experience."

The claim of Friedmann that his material is harmless is not sustained by the results of the investigation. The investigators conclude from the study of the clinical cases as follows:

"The preparation used by Dr. Friedmann in our cases was, not entirely harmless, inasmuch as it frequently produced abscesses or discharging lesions at the site of the injection. Moreover, there is presumptive evidence that it may cause damage to a tuberculous person. For this reason we believe that its promiscuous injection into tuberculous patients is unjustifiable.

"There is evidence that this preparation exerts a specific action when injected into persons suffering from tuberculosis, which in the majority of cases treated with the number of injections which our patients received is insufficient to materially alter the course of the disease, in a small minority of cases redounds to the patient's advantage, and in another small minority results in definite injury.

"The nature of the claims, the cases cited, and the general tone of Dr. Friedmann's article are such as to create the impression that his methods represent a great advance over previous methods of treating tuberculosis. The observations here recorded do not bear out this impression.

"It is realized that the claim will be made that our patients did not receive as protracted a course of treatment as might have been administered if they had been continuously under Dr. Friedmann's care, and that had they received more treatment the result might have been dif-

1. Hyg. Lab. Bull. 99, October, 1914, on the Friedmann Treatment of Tuberculosis. This bulletin may be obtained from the Superintendent of Documents, Washington, D. C., at 10 cents per copy.

ferent. To this claim we can answer: First, that many of the brilliant results which he reports in his article, and which we must assume to be representative, were obtained with but one or two injections; second, that the failure of our patients to receive further treatments was due to Dr. Friedmann's negligence, unprofessional conduct, and commercial greed, primarily, and secondly to the alarm engendered on the part of the health authorities locally responsible by the unfavorable course taken by the disease in certain patients, apparently as a result of the injections."

The laboratory studies consisted of culture of the material on various mediums with observation of the morphology and staining reactions of the Friedmann bacillus. Morphologically and in staining reaction, the Friedmann bacillus showed considerable variation. In general the morphology was indistinguishable from that of tubercle bacilli and the grouping was often characteristic of the pathogenic organism. The animal experiments continued over fourteen months. One hundred and eighty guinea-pigs, thirty rabbits, sixteen monkeys and eight tortoises were used. The animals were weighed weekly and the temperatures of some were taken daily or twice daily. Some of the experimental evidence indicates that the organism is not harmless. Thus, one monkey died after an inoculation with the Friedmann bacillus, and the necropsy showed the presence of clumps of acid-fast bacilli in the liver and spleen. This monkey had reacted negatively to the von Pirquet test before the inoculation with Friedmann bacilli. Two rabbits inoculated with the Friedmann bacillus and afterward with bovine tubercle bacilli showed a certain degree of immunity, but this appears to be no greater than was shown by some of the control rabbits and further examination showed that the tuberculous process was advancing in all the animals, both those which were treated with Friedmann's remedy and the controls. In the attempt to immunize guinea-pigs, the final average duration of life for all treated guinea-pigs was 61.8 days and the average for all controls, 71 days.

The authors summarize their laboratory studies as follows:

"The organism used by Dr. Friedmann is an acid-fast bacillus, morphologically similar to the tubercle bacillus. Culturally, the organism may be distinguished from organisms heretofore recognized as tubercle bacilli. Some of the cultural characteristics can be artificially modified. It is relatively but not completely a virulent and apparently may in very rare cases cause a tubercular process on inoculation (Guinea-Pig No. 11).

"Inoculation with the Friedmann bacillus in the doses used caused, as a rule, hypersusceptibility to bovine tuberculosis in the guinea-pig and rabbit, the treated animals dying earlier, on the average, than the untreated.

"In a few instances the animals which received the Friedmann culture were apparently somewhat resistant to infection, but all showed tuberculosis at autopsy (Guinea-Pigs Nos. 3, 33, 35, and Rabbit No. 1). Neither curative nor protective action against natural or inoculation tuberculosis was shown in monkeys. Acid-fast organisms were repeatedly found in previously healthy guinea-pigs over 100 days after treatment with the Friedmann organism. Dr. Friedmann claimed they 'are never found in the guinea-pig body, even after a short time.' The material used by Dr. Friedmann for the treatment of human beings was found to be at times contaminated with staphylococci."

The following are the general conclusions of the investigation:

"The claims made by Dr. Friedmann for his method of treating tubercular infections are, in brief, that, by means of injections of a living acid-fast organism, harmless of itself, he is able to cure cases of tuberculosis, pulmonary or otherwise, which have not already advanced to that hopeless stage where death is imminent. From the manner of presenting these claims and from the fact that successes only and not failures are reported, the reader of these claims is bound to assume that such results are the rule; in other words, that a sovereign remedy for tuberculosis has at length been discovered, and incidentally that a method has been devised for the administration of living acid-fast organisms which avoid abscess formation, a complication which has hitherto limited their employment.

"The results of the investigation here reported do not confirm the claims made by Dr. Friedmann. We find, in brief, that the preparation used by him is not strictly devoid of dangerous properties of itself, still less so when injected into tuberculous subjects; that the favorable influencing of tuberculous processes by his methods is certainly not the rule, and that if we are to ascribe to the Friedmann treatment the improvement noted in a few cases, we are equally bound to impute to it the serious retrogression observed in other cases; and finally that the phenomenon of abscess formation has not been avoided by Dr. Friedmann's methods.

"We find that the organism used by Dr. Friedmann differs in important cultural characteristics from any heretofore recognized tubercle bacillus. The subcutaneous and intramuscular inoculation of animals with the Friedmann organism caused the formation of abscess in over 25 per cent. of the animals treated.

"The treatment of animals and guinea-pigs—either before or subsequent to infection with virulent

tubercle bacilli, is followed, as a rule, by an increased susceptibility to the disease. "Inoculation of monkeys with the Friedmann culture did not show either curative or protective action in those animals against tuberculosis."

SUMMARY

The investigators summarize their conclusions in the following succinct statements:
The claim of Dr. F. F. Friedmann to have originated a specific cure for tuberculosis is not substantiated by our investigation.
The claim of Dr. F. F. Friedmann that the inoculation of persons and animals with his organism is without harmful properties is disproved.

Medicolegal

Evidence and Damages in Action for Malpractice in Treating Fracture of Clavicle (Duffy vs. Charters (Mich.), 147 N. W. R. 541)

The Supreme Court of Michigan affirms a judgment for \$1,080 damages in the plaintiff's favor, for alleged malpractice in the treatment of an oblique fracture of the left clavicle. The plaintiff's claim, supported by his own testimony and that of two others who were present, was that when the defendant came to his house all he did was to pick up his arm and place it diagonally across his breast so that the points of the fingers of the left hand were against the lower part of the right shoulder, above the armpit and below the top of the defendant claimed was done in the approved method known as Sayre's dressing, but, it was claimed by the plaintiff, was not done as Sayre's method required. Whether the defendant was negligent in that he did not use a proper method in reducing the fracture was the question.

A medical witness produced on behalf of the plaintiff was asked a hypothetical question based on what the lay witnesses testified was done by the defendant when he put on the bandages. It was urged that the question was incomplete and so insufficient as to have no value in assisting the jury in determining the defendant's responsibility. The question did not contain what the defendant claimed he did in reducing the fracture, but stated substantially what the plaintiff claimed he did, as testified to by the witnesses present. Another physician described the proper method to be used in reducing such a fracture. The court holds that the testimony of the plaintiff's witnesses, it was proper to have their answers stand. The question of the value of their evidence and that of the other witnesses for the plaintiff was for the jury, and was properly submitted by the trial court.

It was contended that there was a fatal variance between the plaintiff's declaration and attempted proof of a want of proper union of the broken ends of the clavicle. The declaration charged failure to put the bone or bones of the shoulder properly in apposition and to use the proper means for so placing and keeping them in apposition. The plaintiff argued that the false or fibrous union shown by the proofs was the natural result of imperfect apposition, as set forth in the declaration, and that it was therefore not necessary to specifically allege it. This was supported by the testimony of the physicians, who testified that the first step in the treatment of such a fracture is to get the ends of the bone together and keep them there, if possible, and, unless this is done, no perfect union results. The court thinks the declaration was sufficient to warrant receiving this evidence.

The jury were instructed that, for the pain and suffering which the plaintiff would have actually sustained by reason of this broken clavicle and its treatment, if properly treated, he could not recover damages, because the defendant was not responsible for that. But for the pain and suffering which were extra, if any, which was caused by the defendant, the plaintiff could recover. Under the issue in this case, it was entirely proper to submit to the jury the question of compensation for extra pain and suffering.

Society Proceedings

COMING MEETINGS

American Association of Anatomists, St. Louis, Dec. 28-30.
Amer. Assn. for Study and Prevention of Inf. Mortal., Boston, Nov. 12.
American Physiological Society, St. Louis, Dec. 27-30.
Amer. Public Health Association, Jacksonville, Fla., Nov. 30-Dec. 5.
Medical Association of the Southwest, Galveston, Nov. 10-11.
Medical Society of Hawaii, Honolulu, Nov. 28-30.
Society of American Bacteriologists, Philadelphia, Dec. 29-31.
Southern Medical Association, Richmond, Nov. 9-11.
Southern Surgical and Gynecological Assn., Asheville, N. C., Dec. 15-17.
Western Surgical Association, Denver, Dec. 18-19.

MINNESOTA STATE MEDICAL ASSOCIATION

Annual Meeting held at St. Paul, Oct. 1-2, 1914

(Concluded from page 1602)

Typhoid Prophylactic Vaccination in Two Thousand Cases

DR. C. C. BURLINGAME, Fergus Falls: Prophylactic vaccination against typhoid has seemed to furnish absolute protection to some 2,000 persons, some of whom have undoubtedly been exposed. It has failed to cause much discomfort and has been accomplished by no accident of any kind. The administration of vaccine at regular intervals produces a positive or atypical Widal usually within thirty days in about 94 per cent. of cases. This blood reaction is quite variable and becomes negative with comparative rapidity. Although this reaction has disappeared in the majority of cases, clinical evidence indicates that the immunity continues. The administration of vaccine at irregular intervals appears to have the effect of retarding or inhibiting the development of blood-changes and may or may not have influence on the degree of immunity afforded. There is apparently some evidence in favor of adopting the ten-day interval for vaccination rather than the seventh day.

DISCUSSION

DR. R. R. MULLIN, Minneapolis: It has been clearly shown by the work done at Fergus Falls that we have in the use of antityphoid vaccine a method that is easily employed and easily adapted to protecting the insane against typhoid fever. Dr. Burlingame says about 94 per cent. of the patients will show a positive Widal reaction sometime after the vaccinating process has been undertaken. This corresponds closely to what is thought to be the percentage of cases in which the Widal will occur in actual typhoid. In a small percentage of the cases we fail to get a Widal after the vaccinating process, and so, too, in actual typhoid there is a small percentage of cases in which apparently it seems it is impossible to get a Widal reaction.

DR. C. L. SCOFIELD, Benson: The efficacy of typhoid vaccination has been definitely settled. The town in which I live has gone through a severe epidemic of typhoid. In point of numbers as to population it was the most severe epidemic the state has ever known. One in every twenty of the whole population had typhoid. On the first day of August our first case appeared. In twelve days from the time the first case occurred, the trouble was located in the water supply, and the water was treated with hypochlorite, and the source of infection was removed in about four weeks. During that time all of our 2,000 people had been exposed to the infection. We vaccinated over 1,400 people. There were no severe reactions. After six weeks we are able to say that we have not yet had what we call a secondary case.

DR. L. ULRICH, Minneapolis: No case of typhoid fever ought to be dismissed without an examination of the feces and urine to determine whether or not the case is a typhoid carrier.

Case of Splenic Anemia; Early Splenectomy and Necropsy Two Years Later

DR. THOMAS S. ROBERTS, Minneapolis: There was nothing in the history of the patient suggestive of the etiology of the disease. There was a marked leukocytosis soon after operation, which persisted and increased to the end. The average

number of white cells in eight counts before operation was 4,925; the lowest, 2,700; the highest, 6,500. The average of twelve counts after operation was 15,985; lowest, 9,000; highest, 25,000. There was throughout this case a rather unusually high hemoglobin percentage, the general average being 52 per cent. The average color index was eight; highest, one; lowest, six. A notable irregularity in the shape and size of the red cells was always present, and during the last year became very pronounced. Gastric and intestinal hemorrhages occurred only after the removal of the spleen. There was no jaundice or pigmentation of the skin even during the Banti's stage. There were several periods of improvement, two especially prolonged and pronounced, suggesting recovery, but there was no corresponding improvement in the condition of the blood. Splenectomy, even though done early, did not, contrary to the usual experience in these cases, arrest the disease or modify its course in any way. The clinical diagnosis of uncomplicated splenic anemia was apparently confirmed by the necropsy. The only other important pathologic condition was a moderate grade of parenchymatous nephritis, but this did not seem sufficient to account for the death of the patient, and, moreover, the progress of the case to the very end was like that of splenic anemia and not nephritis.

DISCUSSION

DR. S. MARX WHITE, Minneapolis: It is not necessary to differentiate splenic anemia from Banti's disease. It is the opinion generally that we are dealing with one and the same condition. The term splenic anemia is used particularly for those cases in which the anemia is prominent or has not developed to the point which would correspond with the classical original description which Banti gave it. The results of the surgical treatment by splenectomy would tend to confirm the idea that Banti originally advanced, that the anemia is due to increased hemolytic action on the part of the spleen, or, at least, that we have in the spleen a very important link in the chain of changes which are characteristic of the disease, and which produce the anemia, and which cause the progress of the disorder.

DR. WILLIAM J. MAYO, Rochester: The removal of the spleen is not so serious an operation as we had previously supposed. According to the statistics based on early splenectomies, the mortality varied from 25 to 50 per cent., but at present the mortality from the removal of this organ is very small, provided the patient is in fair condition otherwise.

Avoidable Errors in the Diagnosis of Cardiac Insufficiency

DR. CHARLES LYMAN GREENE, St. Paul: Two great problems lie along the line of prevention in the early recognition of decompensation. Any proper comprehension of cardiovascular ailments must rest on the primary and basic clinical fact that the true problem is always the state of the myocardium. With respect to the subjective symptoms, they are many and varied; few of them are peculiar to cardiac disease, and the fundamental factors in their interpretation are: (1) The relation of their onset to concurrent or antecedent physical exertion, psychic excitation, or a toxemia; (2) their association with the lesser grades of demonstrable dilatation; (3) especially in the case of the middle-aged patients, and to a less degree in younger persons, their relation to excitement or emotional strain; (4) the favorable response both of subjective symptoms and of any increased cardiac outline to cardiac stimulation with or without physical rest or regulated exercise as may be indicated. It would be difficult or impossible to make a positive diagnosis of cardiac insufficiency on the basis of subjective symptoms alone, save in the cases of typical angina pectoris major, which is usually unmistakable.

Medical Education and the Medical Profession

DR. E. P. LYON, Minneapolis: The modern scientific medical school has become a necessity. In this necessity three elements are involved: 1. The material equipment for science training, including buildings, laboratories with proper apparatus, hospitals with proper equipment and adequate patients. 2. The faculty, who should be men of exceptional

training and high character, active in productive scholarship and especially endowed as leaders and teachers. 3. The library, which is the accumulated capital of science, whose wise investment gives light and power to teaching and research. All of these essentials to science training are hard to get and very expensive. The individual student cannot get them for himself exclusively. They must exist and must be provided through some form of cooperative effort. What more natural than that the cooperative unit supplying these facilities should be the state?

Medicine is a public function. The condition arises partly from legal enactments which place various positive duties on doctors. Medical education is an accepted part of public policy. What we need to do is to see that medical education is more adequately and fully supported. It is the duty of the medical profession, as that body of citizens who most clearly recognize this need, to urge it emphatically and constantly. A second inevitable result of the progress of medicine has been the rise of specialism. No man can reach the highest perfection in all parts of medical practice. If he desires to excel he must concentrate on a single field.

The Cancer Problem

DR. WILLIAM J. MAYO, Rochester: Why has the public become so confirmed in the belief that cancer is incurable and how has this pessimism been fostered? One unfortunate result of the inquiry into the influence of heredity on the causation of cancer has been the encouragement of a belief that cancer is hereditary and therefore carries a stigma with it. The person who has been successfully operated on for cancer conceals the nature of his malady with the same solicitude he would probably conceal the fact that he had "done time" in a penitentiary. Of the hundreds of patients who have had cancer and who have been cured by operative means the public knows little or nothing, while those who have had cancer and been operated on without success are known to all.

There is no evidence that would lead to the belief that cancer is hereditary. This is equally true of "cancer houses" and "cancer towns." Small towns in older settled countries have more cancer than new towns; they have more people of a cancer-age; the younger people have left for new fields.

A good diagnostician will seldom mistake syphilis for cancer. Yet the liability to this mistake has been dwelt on and greatly magnified, and many individuals have advanced from the curable to the incurable stage while an effort was being made through antiseptic treatment to eliminate the possibility. The Wassermann reaction has fortunately come to our aid and to the patient's rescue.

Mistakes in diagnosis from lack of careful examination is the most common cause of failure to recognize malignant disease in time for a curable operation. A too high percentage of patients with cancer are subjected to inefficient operation by inexperienced men. Because the disease is early it appears as though it might be easily cured and men who would not think of operating where a radical operation was to be done, will often make a small operation—futile, hopeless.

The surgeon has had a great share in creating the feeling of hopelessness which exists among the laity and discouraging the general practitioners by attempts at radical operation in plainly incurable disease or extensive palliative operations which fail to palliate.

Radio-active substances have a field of usefulness in superficial growths and inoperable disease, but these agents should not be used in early growths curable by operation. The embryonic cell, such as the cancer cell, has less vitality than the normal cell and is injuriously affected by heat. The Percy method of using heat raised to such a degree as to coagulate the embryonic cells by a slow cooking process is a distinct advance.

Great benefit in diagnosis before operation has come from the radiograph and at the operating table by means of the frozen section. The first enables us to know in a large percentage of cases what we are going to find and the latter

gives the microscopic diagnosis while the operation is in progress.

The prophylaxis of cancer is exceedingly important. Let us say to the public: "Go to your physician at once on the discovery of any sign or symptom of irritation about warts, moles and benign tumors, or ulcerations, chronic inflammatory processes or injuries, however slight, which fail to heal promptly." When the laity understand that all sources of irritation carry with them a deadly significance, the prevention of cancer will have been greatly advanced and the percentage of curable cases which come to the only known cure—operation—will be enormously increased.

DELAWARE STATE MEDICAL ASSOCIATION

One Hundred and Twenty-Fifth Annual Meeting, held at Wilmington, Oct. 12-13, 1914

The President, DR. H. W. BRIGGS, Wilmington, in the Chair

Puerperal Infection

DR. J. J. JONES, Wilmington: I am in favor of conservative surgery wherever possible. In cases of incomplete abortion, if I cannot remove remnants of placenta with the Bell curet, I leave them alone. I pack the uterus, using 1-inch tape, with a solution of tincture of iodine, phenol (carbolic acid), glycerin and thiol.

DISCUSSION

DR. WILLARD SPRINGER, Wilmington: I do not think any one uses sharp curets nowadays. Why does Dr. Jones put such a shotgun combination into the uterus instead of packing it with iodoform gauze?

DR. GEORGE I. MCKELWAY, Dover: There is no word quite so much abused as that word "conservative." The best possible conservation is the conservation of the patient and not of a lot of diseased tissues. Too much cannot be said about delay in operation in cases whenever pus is concerned. Most men have learned that the best thing to do with a boil is to open it before pus forms. It is best to operate very quickly in cases of puerperal infection rather than to wait. The two fingers constitute the best curet in cases of puerperal infection and retained placenta. The hand can be introduced into the vagina in its entirety, two fingers introduced into the uterus, the other hand on the outside of the abdomen, and the uterus can be cleaned out absolutely and thoroughly.

DR. SAMUEL C. RUMFORD, Wilmington: I do not think that many of the men who do much of this work use the sharp curet. A dull curet, or better, the fingers, will clear out the foreign material and shorten the woman's convalescence.

DR. J. J. JONES, Wilmington: I use the combination that I spoke of in place of iodoform because I have used iodoform and found that there was some poisonous effect from it. The mixture which I use is not strong enough to corrode the endometrium, and yet the glycerin in it acts as a depleting agent to the uterus. There might have been a time when the finger was the best curet, but I believe that time has passed. We have something better than the finger to-day, and better still than to manipulate much is to leave it alone and drain the uterus and Nature will do the rest. I have handled hundreds of these cases and I have the first patient yet to die of waiting. I have had pus in the abdomen, pus in the joints and pus everywhere. Improve the condition of the patient to fight the trouble she has. Do not operate immediately. Find out whether the patient can stand the operation.

Some Cases Treated by Physical Therapeutics

DR. WILLIAM MARSHALL, Milford: Since the beginning of the year I have been using different types of electrical treatment in a variety of cases. I have found autocondensation to be very effective in reducing high blood-pressure and giving relief to symptoms associated therewith. In high tension cases it is necessary to abstain from heavy meals, to cut down the amount of liquid and proteins ingested and to avoid worry, overwork, exposure, constipation and excesses of all kinds. My experience in the treatment of menorrhagia by

means of the Roentgen ray and the treatment of catarrhal conditions of the nose and ears has been very gratifying. I have been able to relieve the pain of neuralgia and neuritis by means of a few applications of the high-frequency current through the medium of a vacuum tube.

DISCUSSION

DR. HENRY J. STUBBS, Wilmington: The high-frequency current will reduce blood-pressure. The question arises how much and when to reduce blood-pressure. Treat once or twice a month to keep up the effect. This current has some effect on the artery and we do not want to produce too much change in the arteries when a patient is from 50 to 60 years of age. Keep up treatment to get the effect of softening the deposit in the arteries. I have been disappointed in the treatment of angina. Where we have high pressure without ia of the heart I get excellent results. I have had with pressure of 240 to 270.

ERT ROBIN, Wilmington: I wish to report failures. was that of a woman between 50 and 60 years of age who had slight arteriosclerosis. The blood-pressure would rise to 190 and stay there for a considerable time. The nitrites would reduce it; so would rest in bed, on exclusive milk diet, but then it would come up as soon as she got on her feet. I had a high-frequency apparatus put in her bedroom and told her to use it very day. The treatment was given every day for months. Reduction of pressure did occur to the extent of 20 or 30 points, but it would soon come up again, and as far as any permanent results are concerned I saw none. At present the woman is in the same condition as before. In all probability the high blood-pressure is compensatory and we may probably come to the point later on when we shall decide not to try to reduce the pressure unless it produces decided symptoms. Another point is that arteriosclerosis is characterized by the existence of fibrous tissue in the blood-vessels. When you destroy the fibrous tissue it is replaced by more fibrous tissue; fibrous tissue replaces itself invariably. The fibrous tissue cannot be dissolved.

DR. H. A. CLEAVER, Wilmington: What little experience I have had in high-frequency and static work has been such as to convert me from disbelief to reasoning. I have had two evidence in my own person. I have had sciatica until I was frantic with the pain; $\frac{1}{3}$ grain of morphin gave me no relief. The static machine relieved me in less than twenty minutes. I treated a man who had sciatica. He had been under treatment by others for months without getting relief. The second treatment with the high-frequency current relieved him completely.

DR. H. K. STUBBS, Wilmington: We know that the success of electricity depends largely on the Morton wave. You can get it only on a static machine and in no other way. The coil is the most essential thing you can use. I do not think it cures everything, but there are marvelous successes. We get the results. That is what the patients want.

DR. WILLIAM MARSHALL, Milford: High blood-pressure is often compensatory, but sometimes it will go up so high that compensation is lost. In these cases the only drugs I have found useful are digitalis and strychnin. They will bring the pressure down and they are the only drugs that will.

Referred Pain in Gynecologic Conditions

DR. SAMUEL C. RUMFORD, Wilmington: A normal healthy woman should be no more conscious of her pelvic organs than the average schoolboy is of his heart, but unfortunately so many abnormal conditions exist in women that their discomfort calls for attention. Nature has so placed the uterus and ovaries that they swing freely in the pelvis and are exempt from blows, jars, etc. When the uterus leaves its normal position either because of inflammatory adhesions or condition of its suspensory ligaments then its natural's upset, nerves are pulled and pressed on and veins congested, with a resulting amount of discomfort to The posterior positions, however, are the ones use ovarian discomfort, as the tubes and ovaries ldesac, where, if they do not become

inflamed and adherent, at least they are subjected to more pressure than when in their original position. Backache is a very constant symptom of gynecologic conditions and is explained by the rich distribution of sympathetic nerves supplied to the genital tract which act reflexly on the spinal cord. Individuals vary in their power of nerve resistance as in other ways, and we quite commonly see one woman with a gross pathologic condition in the pelvis who suffers much less than another who may be a nervous wreck because of some minor defect. It is our duty to help these nervous and hysteric women who offer some real lesion, for their mental suffering is often very great and, if not relieved, may become serious. The right lower abdominal quadrant of women is the most difficult area of their anatomy in which to make a satisfactory diagnosis in ^{of unc} cases, for there are situated in this region so many sources from which painful symptoms may arise. Such ^{of unc} are often diagnosed only at operation.

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Titles marked with DISCU an asterisk (*) are abstracted below.

- Albany, Minne (N. Y.) Medical Annals
October, we are XXXV, No. 10, pp. 527-574
- 1 Cortical Connections of Rel Nucleus. L. Archambault, Albany.
 - 2 *Use of Normal splenic Horse Serum for Prevention of Hemorrhage in Nose and Throat Operations. C. F. Theisen and N. K. Fromm, Albany.
 - 3 Acute Ileocolitis descri of Infancy. D. V. O'Leary, Jr., Albany.
 2. Use of Normal Horse Serum.—In eight cases reported by Theisen and Fromm the average coagulation time before injection of the serum was 5.18 minutes, and after injection 4.12 minutes, making a chain of the average decrease in coagulation time of 1.06 minutes. Considering the comparative safety in the use of serum, and the great lessening of the danger of post-operative hemorrhage, the authors advise that it should be used whenever an operation must be undertaken in a subject of the hemorrhagic or hemophilic diathesis.
- American Journal of Obstetrics and Disease of Women and Children, New York, Pa.
October, LXX, No. 4, pp. 545-688
- 4 Anatomic Study of Very Early The Dubal Pregnancy; Decidual Reaction in Ectopic Gestation. M. C. Cenci, New York.
 - 5 Pituitary Extract in Obstetrics. S. J. Druskin, New York.
 - 6 *Tracheloplasty, New Operation for Relief of Sterility Due to Strsis of Cervix Uteri. E. A. Schumann, Philadelphia.
 - 7 Removal of Both Breasts, with Subsequent Pregnancy and Entire Absence of Labor Pains. W. E. Parrish, Philadelphia.
 - 8 Case Report Illustrating Certain Dangers of In Use of Intra-Uterine Stem. W. R. Nicholson, Philadelphia.
 - 9 *Total Non-Protein Nitrogen of Blood in Five Toxemias of Pregnancy. C. B. Farr and P. F. Williams, Philadelphia.
 - 10 Scopolamin Narcophin Seminarcosis in Labor. J. A. Hamer, New York.
 - 11 Use of Scopolamin in Obstetrics. A. J. Rongy, New York.
 - 12 Thyroid Gland and Its Degenerations in Relation to Gynecology. C. W. Barrett, Chicago.

6. Tracheloplasty for Sterility.—The procedure employed by Schumann depends on the excision of a portion of the cervical endometrium and its replacement with a strip of mucous membrane covered with flat squamous epithelium and derived from the mucosa of the posterior vaginal vault. The operation in detail is as follows: Under ether anesthesia, the cervix is dilated to fully $1\frac{1}{2}$ inches with the Goodell dilator and the uterus curetted or not as the indications demand. A strip of the cervical mucosa 1 centimeter in width is then removed from the center of the posterior lip of the cervix and extending from the internal to the external os. The entire thickness of the mucosa is to be removed, down to the muscularis, and the edges of the denudation are to be smooth and regular.

The cervix is now drawn upward out of the way and a strip of mucous membrane is cut from the posterior vaginal vault, the top of the strip corresponding to the upper attach-

ment of the vagina to the cervix. The vaginal strip is cut to fit the denudation in the cervical canal, and the lower margin is left attached to the vagina for purposes of nutrition. The resulting denuded area in the vaginal vault is drawn together by interrupted catgut sutures and the defect closed. The strip of vaginal mucosa, free except for its lower extremity, is then inserted into the canal previously cut in the posterior cervical wall and fastened in place by a few interrupted sutures of fine catgut, and the operation is complete. From five to seven days later, when the vaginal insert has become closely adherent to the tissues of the cervix and its nutrient blood supply is well established, the narrow band connecting the vaginal strip with the vaginal floor is severed with scissors and any redundant tissue trimmed away. The end result is a cervical canal having in its posterior wall a gutter of mucosa covered with flat squamous epithelium, which permits the free ingress of spermatozoa no matter how great the degree of cervical spasm or stenosis may be.

9. **Non-Protein Nitrogen of Blood.**—As a rule the total non-protein nitrogen of the blood does not exceed 30 mg. per 100 c.c. of the whole blood in a normal pregnancy. In those pregnant women who have renal changes associated or not with toxic manifestations, as convulsions, there is usually a slight and in most cases a definite increase in the total non-protein nitrogen. But the increase bears no relation to the severity of the symptoms. The degree of retention corresponds to that seen in parenchymatous nephritis. The amount of phenolsulphonophthalein eliminated varies so with the clinical picture that the use of this test does not appear to Farr and Williams to be of much value either as a diagnostic or prognostic aid in the toxemias of pregnancy.

American Journal of Tropical Diseases and Preventive Medicine, New Orleans

June, 1, No. 12, pp. 815-892

- 13 Beriberi. E. B. Vedder, U. S. Army.
- 14 Educational Methods for Use in Antimalarial Work. H. R. Carter, Baltimore.
- 15 Malarial Investigations in United States by U. S. P. H. Service. R. H. von Ezdorf, Mobile, Ala.
- 16 Prevention of Malaria and Its Relation to Drainage of Swamps and Other Collections of Water. I. W. Brewer, New York.
- 17 Administration of Emetin to Young and Debilitated Children. N. Barlow, Cuyamel, Honduras.
- 18 Rheumatic Malarial Fever. N. Barlow, Cuyamel, Honduras.
- 19 Ulcus Interdigitalis Fetidum. N. Barlow, Cuyamel, Honduras.

Archives of Internal Medicine, Chicago

October, XL, No. 4, pp. 453-608

- 20 *Relation of Methods of Disposal of Sewage to Spread of Pellagra. J. F. Siler, P. E. Garrison, U. S. Army, and W. J. MacNeal, New York.
- 21 *Normal Presystolic Sound. E. W. Bridgman, Baltimore.
- 22 Periarthritis Nodosa; Report of Two Cases. A. R. Lamb, New York.
- 23 *Latent Hypertrophy of Heart in Nephritis of Children. H. Wessler, New York.
- 24 Non-Specificity of Carbohydrate Tolerance Tests. J. C. Friedman and S. Strouse, Chicago.
- 25 Potassium Content of Cerebrospinal Fluid in Various Diseases. J. Rosenbloom and V. L. Andrews, Pittsburgh.
- 26 *Relation Between Phenolsulphonophthalein Excretion in Urine and Non-Protein Nitrogen Content of Blood in Human Cases. C. Frothingham, Jr., and W. G. Smillie, Boston.
- 27 *Point to Be Considered in Use of Abderhalden Reaction. E. L. Ross and H. D. Singer, Kankakee.
- 28 Specificity of Cholesterolin with Syphilitic Serums and of Cholesterolin-Reinforced Heart Antigen in Wassermann Reaction. I. C. Walker, Boston.
- 29 *Botulism. Food-Poisoning Apparently Due to Eating of Canned String Beans. Report of Fatal Case. R. L. Wilbur and W. Ophüls, San Francisco.
- 30 *Normal Peculiarities of Heart-Sounds in Region of Sternum. G. Blumer, New Haven, Conn.

20. **Disposal of Sewage and Spread of Pellagra.**—The authors found that pellagra morbidity was higher in congested communities using surface privies than in more sparsely settled districts in which similar methods for the disposal of excreta were employed. In the city of Spartanburg the endemic foci of pellagra were located in the districts in which surface privies were in use. In cotton-mill villages equipped with surface privies pellagra was found to be endemic and new cases of the disease arose there year after

year. In two cotton-mill villages completely equipped with water-carriage systems of sewage disposal it was impossible to find cases of pellagra which had certainly originated there, although some cases which had originated elsewhere were present. There is some evidence that pellagra spreads in hospitals for the insane more readily in the wards housing untidy patients. This study indicates that methods of disposal of human wastes may prove to be a determining factor in the spread of pellagra in certain communities and it suggests a possible method of prophylaxis, which is now being tested in a practical way.

21. **Normal Presystolic Sound.**—A presystolic sound, which is generally below the limits of human audibility, was shown on the phonographic tracings of a number of normal boys studied by Bridgman. It occurs 0.02 second after the beginning of the auricular wave of the apex cardiogram, 0.07 second before the beginning of the first sound; is of a duration of 0.04 second. A possible etiologic factor is suggested, the tension of the ventricular walls, and a possible relationship between this sound and the presystolic gallop is called to mind.

23. **Latent Hypertrophy of Heart in Nephritis in Children.**—Of eight cases of mild nephritis following scarlet fever five showed albumin in the urine usually in traces, not constantly, and with the occasional appearance of hyaline casts. In three of them, on a single examination, albumin was not found. The physical signs pointing to cardiac hypertrophy were the classical ones. They were in evidence in each case and especially significant was the clear, and at times ringing aortic second sound, which usually exceeded in intensity the pulmonic sound.

In all the cases in this group the orthodiagraphic examination disclosed a more or less marked hypertrophy of the left ventricle. The aorta was frequently dilated and showed an unusually marked pulsation. There was evidence in two of the patients of a muscular insufficiency of the left ventricle. Of six cases of chronic and subacute hemorrhagic nephritis in children, the etiology in three was scarlet fever; it was undetermined in the others. With one exception, these patients had an acute hemorrhagic nephritis with edema, a relatively short time previously, signs of which continued with abated severity to the present. The urines of all of them contain large amounts of albumin, hyaline and granular casts and red blood cells. Of cardiac symptoms, these patients had few, only two of them complaining of dyspnea on exertion. The physical signs were uniformly those of hypertrophy of the left ventricle without dilatation, findings which were convincingly shown by orthodiagraphic tracings. In two cases of acute glomerular nephritis an exquisite left ventricular hypertrophy had developed with the usual clinical signs and fluoroscopic appearance.

26. **Phenolsulphonophthalein Excretion in Urine and Non-Protein Nitrogen Content of Blood.**—The authors found that many cases of chronic nephritis show normal phenolsulphonophthalein excretion and normal non-protein nitrogen content in the blood. The content of non-protein nitrogen in the blood varies in a rough way inversely with the excretion of phenolsulphonophthalein in the urine in nephritis. The phenolsulphonophthalein excretion is influenced by cardiac decompensation and other unknown factors so that quite unexpected results occur in individual cases. The content of non-protein nitrogen in the blood seems to be less influenced by cardiac and other complicating factors. The amount of non-protein nitrogen in the blood seems to be of considerable prognostic value. The height of the blood-pressure and the pulse-pressure do not seem to be of prognostic importance in nephritis.

27. **Abderhalden Reaction.**—Ross and Singer summarize their work as follows: 1. Using the Abderhalden technic with the Abderhalden reaction, the serums of normal animals frequently show evidence of the presence of ferments capable of digesting various tissues of the body. 2. The material causing the positive Abderhalden reactions between normal serum and normal tissue may be precipitated from the washings by the addition of an equal volume of alcohol. 3. The

this treatment was instituted. The patient has improved to the degree that he is now able to be out most of his time. He has gained 30 pounds in weight, but has not yet resumed his regular duties.

Laryngoscope, St. Louis

September, XXIV, No. 9, pp. 773-836

- 103 Oral Complications of Exanthemata. C. R. C. Borden, Boston.
- 104 Etiology, Diagnosis and Treatment of Aural Complications of Exanthemata. S. A. Friedberg, Chicago.
- 105 Two Cases of Loss of Caloric Vestibular Reaction, with Operative Findings. E. B. Dench, New York.
- 106 Teratoma of Pharynx. C. C. Eves, Philadelphia.
- 107 Orbital Abscess with Optic Neuritis Due to Acute Ethmoiditis in Child. Operation. J. H. Guntzer, New York.
- 108 Use of Vaccines in Treatment of Chronic Diphtheria Carriers. A. I. Weil, New Orleans.
- 109 Apparatus for Giving an Approximately Accurate Quantitative Hearing Test. J. W. Downey, Jr., Baltimore.
- 110 New Tonsillectome. H. B. Searcy, Tuscaloosa, Ala.

Medical Record, New York

October 24, LXXXVI, No. 17, pp. 769-740

- 111 Relation of Diet to Cancer. L. D. Bulkley, New York.
- 112 Amputations. A. M. Fauntleroy, U. S. Navy.
- 113 Neurologic and Psychiatric Aspects of Railway Accident Cases. Some Medicolegal Problems. A. Gordon, Philadelphia.
- 114 Modern Treatment of Syphilis. W. H. Watters, Boston.
- 115 Acute Leukemia. A. Strauch, Chicago.
- 116 Umbilical Infections. R. L. Vioran, Chicago.
- 117 Occlusion of Inferior Mesenteric Artery. E. D. Friedman, New York.
- 118 Case of Giant-Cell Sarcoma Successfully Treated by Combination of Surgery and Roentgen Rays. E. Birdsall, Glens Falls.

New York Medical Journal

October 24, C, No. 17, pp. 797-848

- 119 *Muscle Bound Feet. R. A. Hibbs, New York.
- 120 Eventration of Diaphragm. M. Manges and H. Wessler, New York.
- 121 Tuberculosis of Conjunctiva. W. T. Shoemaker, Philadelphia.
- 122 Neoplasms of Bladder. F. R. Hagner, Washington, D. C.
- 123 End-Results of Criminal Abortion. M. Rabinovitz, New York.
- 124 New Bed Bathtub. E. A. Gallegher, New York.
- 125 Implantation of Generative Glands and Its Therapeutic Possibilities. G. F. Lydston, Chicago. (To be continued.)
- 126 Curette for Endotympanum. E. L. Meierhof, New York.
- 127 Syphilis in Colored Canal Laborers. W. G. Baetz, Canal Zone.
- 128 Horse Asthma. J. G. Missildine, Parsons, Kan.

119. Muscle Bound Feet.—Limitation to dorsal flexion, Hibbs states, is a common cause of muscle bound feet. The removal of the limit to dorsal flexion must be accomplished by some method which at the same time inhibits the function of the calf, after walking is resumed, long enough to allow the opposing anterior leg muscles to develop. Otherwise muscle balance will not be restored and no permanent good will be accomplished. Lengthening the tendo Achillis fulfills these conditions perfectly. It removes at once the limit to dorsal flexion and at the same time inhibits the function of the calf for from two to three months in children and four to six months in adults, giving abundant time for the proper development of the opposing muscles and the intrinsic muscles of the foot, and for the complete restoration of normal muscle balance.

In operating on the tendo Achillis, Hibbs sees to it that the continuity of the tendon is unbroken, its lengthening accurate, and its sheath preserved, so that there is absolutely no danger of any impairment of the strength of the tendon or the function of the muscle. Thirty-eight patients have been entirely relieved from the symptoms of which they complained and have had restored to them the capacity to walk normally and do so with pleasure and great benefit to their general health, and none of them have required further treatment of any kind.

Old Dominion Journal of Medicine and Surgery, Richmond, Va.

October, XIX, No. 4, pp. 121-162

- 129 Laparotomies of Four Years at Abingdon Hospital. A. M. Willis, Richmond.
- 130 *Back Ache—Its Cause and Its Treatment. W. T. Graham, Richmond.
- 131 Sporotrichosis (?). E. P. McGavock, Richmond.
- 132 Cholesteatomatous Involvement of Mastoid. R. H. Wright, Richmond.
- 133 Typhoid, Hemorrhagic. R. S. Preston, Richmond.

130. Back Ache—Its Causes and Its Treatment.—Back ache due to flat foot, Graham says, usually disappears promptly when the inner sides of the heels of the boots are elevated $\frac{1}{4}$ of an inch and the inner corners of the heels set $\frac{1}{2}$ inch farther forward than the outer corners. If this does not afford the desired relief the arches may be supported by felt pads or steel supporters. Of the two forms of support mentioned, Graham much prefers the felt instep pads to the rigid steel supports. The most common surgical cause of continued back ache met with in children and occasionally encountered in adults, he says, is spinal caries or tuberculosis of the spine. When acute, as evidenced by marked muscular spasm of the back and exquisite pain, the patient should be placed on a Bradford frame with a bag of sawdust underneath the spine so as to produce a posture of hyperextension. When the acute stage has sufficiently subsided a plaster corset is applied extending from the sternal notch above to a point just sufficient to allow the patient to sit down. During the latter stage of convalescence a steel brace may be worn. When ankylosis is well established and all pain has disappeared all support may be gradually omitted.

Sacro-iliac strain is relieved in the milder cases by adhesive strips which should be placed diagonally across the lumbar region. Starting at a point just below the anterior superior spine, the strip of adhesive is carried diagonally across the back. Then one is started on the opposite side and carried across in a similar manner. The successive strips overlap each other from $\frac{1}{3}$ to $\frac{1}{2}$ of the width of the strip. Then circular bands encase the pelvis. For the chronic types of sacro-iliac strain a leather belt around the pelvis often affords perfect relief. This belt is worn tight around the pelvis in order to prevent movement in the sacro-iliac joint. In the more serious types fixation by plaster or a steel splint are indicated. For spondylitis deformans, a condition in which bony deposits are thrown out around the articular surfaces of the vertebra and on the spinous and transverse processes, producing a painful and deforming condition, a long plaster corset extending from the pelvis to the suprasternal notch offers the best hope of relief.

Lumbago is best treated by the crisscross adhesive strapping as described for sacro-iliac strain, except that it is not necessary in this condition to encircle the pelvis. Visceroposis causes much back ache which can be relieved by a corset which fits snugly around the pelvis and supports the abdominal viscera and strengthens the abdominal wall. The corset should begin to be less snug as it leaves the brim of the pelvis, and should gradually become more open from that point upward. In exceptional cases an abdominal pad or an abdominal supporter, to be worn inside the corset, is indicated. Static back, a condition indicated by weak, flabby muscles and accompanied by faulty weight bearing and pain, calls for massage, exercises and a properly adjusted corset. Scorbutic spine is best treated by recumbency on a Bradford frame, with the spine hyperextended, proper attention being given to diet and hygiene.

Philippine Journal of Science, Manila

June, IX, No. 3, pp. 199-305

- 134 Some Data Concerning Medical Geography of Philippines. F. Calderon, Manila.
- 135 Etiology of Trichomycosis Palmellina in Philippine Islands. O. Schöbl, Manila.
- 136 *Bacteriology of Leprosy. J. A. Johnston, Manila.
- 137 Intestinal Helminthiasis in Philippine Islands as Indicated by Examinations of Prisoners on Admission to Bilibid Prison, Manila. D. G. Willets, Manila.
- 138 Bacillary Dysentery: Most Prevalent Form in Manila and Its Treatment. W. E. Musgrave and A. G. Sison, Manila.
- 139 Widal Reactions Among Healthy Adult Filipinos. D. G. Willets, Manila.
- 140 Experiments on Cultivation of Rinderpest Virus as Described by Baldrey. W. H. Boynton, Manila.
- 141 Kidney-Worm Infestation of Swine in Philippine Islands, with Special Reference to Pathologic Changes. W. H. Boynton, Manila.
- 142 Another Dangerous Jellyfish in Philippine Islands. S. F. Light, Manila.
- 143 Some Simple Laboratory Apparatus: Thermoesthesiometer; Venous Pressure Apparatus; Simple Timing System. R. B. Gibson, Manila.

136. **Bacteriology of Leprosy.**—From the spleens of two lepers who died Johnston succeeded in cultivating an absolutely non-acid-fast streptothrix. These two strains are apparently identical, and now grow readily on the ordinary glycerin agar, but the original isolations were slow in growth. They were made on placental agar and fish-juice agar, and required from three to four weeks for growth to become apparent. The growth of this organism is described as spreading, with a tendency toward the formation of small islets with an elevated center. These eventually coalesce and the surface growth is dull and more or less rugose. It is pearly white in young cultures, becoming brown in cultures more than four months old.

Several forty-eight hour cultures of this streptothrix were rubbed up in a mortar and a number of guinea-pigs and rabbits were inoculated with this suspension. The rabbits were all inoculated with 1 cubic centimeter intravenously; the guinea-pigs with 0.5 cubic centimeter subcutaneously in each groin. Of this series, one animal died while three animals are still alive; the others, numbering sixteen, were killed at varying periods from a week up to six months. No lesions were discovered post mortem in the series of animals killed. One guinea-pig dying, however, showed a slightly enlarged liver with a few scattered nodules on the under-surface. There was no glandular enlargement. Smears from the cut surface of several of the nodules showed no organisms, but many small rounded masses from 3 to 6 microns in greatest diameter were visible; these were distinctly fast. Johnston had noted similar masses in the juice expressed from a leproma, in scrapings from a nasal ulcer in a leper, and also in old cultures of the streptothrix. Some of these bodies had frayed-out edges, and resembled blood-plates as they sometimes see them. Nine days after, cultures made from these nodules showed in two tubes of placental agar a slight whitish growth of about the consistency of cream cheese. It was spreading, did not grow in the water of condensation, and at the end of four weeks covered the surface of the slant. Stained preparations from these cultures showed long and short rods which were distinctly acid fast.

In April a second series of animals was inoculated as before. One of the guinea-pigs developed a pussy discharge from its left eye eight days after inoculation. Stained smears showed enormous quantities of acid-fast bacilli. Cultures from this guinea-pig were all negative at the end of two months. This animal died some nine months later, and the liver, lungs, spleen and some of the lymph glands showed marked nodular involvement. Smears from the different organs showed a few acid-fast bacilli. Cultures made from the spleen on placental agar showed after two weeks a growth practically identical with the first isolation. Efforts to identify the organisms isolated by means of agglutination and deviation of complement tests have been so far unsatisfactory.

Public Health Journal, Toronto

October, V, No. 10, pp. 611-656

- 144 Public Health and General Practitioner. T. H. Whitelaw, Edmonton, Alberta.
- 145 Use of Reibelagar in Water and Milk Examination. J. Race, Ottawa.
- 146 Standards with Reference to Sewage Treatment. T. A. Murray.
- 147 Some Difficulties of Medical Officers of Health in Towns and Rural Communities. T. W. Vardon, Galt.
- 148 Conservation of Child Life. J. J. Kelso, Ontario.

Texas State Journal of Medicine, Fort Worth

October, X, No. 6, pp. 215-254

- 149 Sarcoma. W. A. Bryan, Nashville, Tenn.
- 150 Carcinoma of Stomach: Early Diagnosis. R. W. Knox, Houston.
- 151 Method of Choice in Prostatectomy. F. C. Walsh, San Antonio.
- 152 Some Laboratory Methods Which Deserve Wider Usage. M. A. Wood, Houston.
- 153 Significance of Acid-Fast Bacilli in Urine. J. E. Robinson, Temple.
- 154 Microscopy of Urinary Sediment in Life-Insurance Examinations. W. F. Thomson, Beaumont.
- 155 Examination of Urine in Life-Insurance Examinations. W. Harrall, Dallas.
- 156 Eye Symptoms in Brain Tumor. H. T. Aynesworth, Waco.
- 157 Gunshot Wound of Cavernous Plexus. Report of Case. E. H. Cary, Dallas.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Tuberculosis, London

October, VIII, No. 4, pp. 195-244

- 1 *Milk-Supply as Causal Factor in Tuberculosis. S. Delépine.
- 2 *Surgical Tuberculosis in Childhood. R. L. Knaggs.
- 3 *Arneth Count in Pulmonary Tuberculosis. W. E. Cooke.
- 4 *"Albumin Reaction" of Sputum in Pulmonary Tuberculosis. E. G. Glover.
- 5 Tuberculosis Conference at Leeds. H. D. Woodcock.

1. **Milk-Supply and Tuberculosis.**—Delépine's investigations indicate that cow's milk plays a very important part in the production of infantile tuberculosis in England and Scotland.

2. **Surgical Tuberculosis in Childhood.**—Rest in the treatment of joint tuberculosis according to Knaggs if properly made use of, will, in a large proportion of cases, make recourse to surgery unnecessary, although he admits that only in a hospital can these patients get the rest and extension treatment which is so essential to their recovery.

3. **Arneth Count in Pulmonary Tuberculosis.**—A blood-film showing an increase of large mononuclears, perhaps a slight increase in lymphocytes, and a dislocation of the "Arneth" to the left, Cooke agrees with others is strong evidence of the existence of an active tuberculous focus. The Arneth count also tells whether any absorption of toxins is taking place, and therefore whether the lesion is active or quiescent. A left-handed dislocation always indicates toxemia. As an aid to prognosis the Arneth count is valuable. A patient with few physical signs presenting a marked dislocation of the count to the left, which does not improve under treatment, must be looked on as in grave condition. There is probably a larger amount of mischief than is indicated by the physical signs. If the count tends to assume a more right-handed appearance, the prognosis becomes more hopeful, according to the amount of that improvement.

Lastly, the Arneth count is a guide to treatment. In treatment by tuberculin the count affords evidence as to whether the focal reactions are taxing the patient's capacity of dealing with the toxins resulting from them. If tuberculin be pushed too far, there appears an increase in the cells of classes 1 and 2. If the Arneth count is stationary, the dose has for the time being reached its therapeutic maximum. In treatment by "contratoxin" the count is also useful. The bacteriolysis and phagocytosis generated by "contratoxin" produce an auto-inoculation. This causes a further deviation of the count to the left; an indication, therefore, temporarily to reduce the dose, or discontinue its administration for a short time. When this is done the count soon assumes its previous appearance and continues to move to the right. Further injections are indicated until the count becomes normal.

4. **"Albumin Reaction" of Sputum.**—Two hundred and ten quantitative examinations of the sputum were made by Glover in 149 cases, and he found that the sputum of phthisis patients contains, on the average, a larger amount of albumin than that of the non-tuberculous, but that the amount present in tuberculosis cases is often less than that usually found in the non-tuberculous. Injury to the epithelial surface of any part of the respiratory or buccal tract may give to the presence of albumin in the sputum. Glover points out that a sputum test, the delicacy of which may be impaired by the vigorous brushing of teeth prior to expectoration does not give promise of conclusive results or material assistance in the diagnosis of doubtful cases of pulmonary tuberculosis.

British Medical Journal, London

October 10, II, No. 2806, pp. 609-652

- 6 *Tetanus; Its Prevention and Treatment by Use of Antitetanic Serum. A. MacConkey.
- 7 Insects and War; Flour Moth in Soldiers' Biscuits. A. E. Shipley.
- 8 Treatment of Syphilis. J. E. R. McDonagh.
- 9 Need of Method in Treatment of Lupus. N. Walker.
- 10 *Antimony in Syphilis. J. C. McWalter.
- 11 Modus Operandi of Wassermann Reaction. J. E. R. McDonagh.

trouble is not in the chyme nor intestinal wall but beyond this, in the preparation of the albumin molecule for absorption. The improperly prepared molecule acts like a poison, setting up a kind of anaphylaxis, as he explains and describes in detail, with the tabulated metabolic findings in a number of typical cases. They showed a toxic relative lymphocytosis, increase in the specific precipitins, and a new precipitin appeared in the blood. The anaphylaxis condition may entail disturbance in carbohydrate metabolism and this disturbance may persist even after the primary cause, the malnutrition, has ceased to act. This all paves the way for diabetes and other metabolic diseases. The improperly prepared alien albumin may get into the blood from the food or from the pathologic product of some gland with an internal secretion—often as a response to the stimulus from food entering the bowel. Correction of one may have a favorable influence on the other. When diabetes is complicated with gastro-enteritis, the sugar output may often be reduced to normal merely by curing the stomach and bowel trouble. As the gastro-intestinal mucosa becomes less permeable for the alien albumin, and its normal functions are restored, the functioning of glands with an internal secretion, the pancreas in particular, improves with it.

Funck has often succeeded in restoring clinically normal conditions in the intermediate metabolism by modifying the diet, lavage of the stomach, supplying substitutes for lacking digestive ferments, and having the patient drink large amounts of a mineral water. But far beyond the effect of these measures is systematic flushing out of the bowel with a hypotonic solution through a duodenal sound. This clears out the bowel, draws out toxic secretions and washes them away, modifies the bacterial flora and its culture media in the intestines, while exerting a healing action on the mucosa and glands in the bowel. He uses three liters in from two to five hours, or keeps up the irrigation for sixty hours. In some cases of impending uremia he rinsed the bowel first with a hypotonic solution without chlorids and followed this with an isotonic diuretic solution, keeping up this enteral drainage for six hours. The blood-pressure subsided to 35 mm. and profuse diuresis followed. Similar prompt and far-reaching benefit was realized in delayed reabsorption of effusion and transudates, in anemia, in "presclerosis," and to promote the elimination of the products of acute infection. In a case of "asystolic toxemia" the pulse was reduced by this enteral drainage from 112 to 84, the respiration rate from 26 to 18, while the output of urine increased from 950 to 1,750 c.c. in thirty-six hours.

The clinical manifestations of this form of chronic malnutrition may include dyspepsia in its broadest sense, pruritus, eczema, neurasthenia or neuralgia, constipation generally of the spastic type, diarrhea with all the signs of an enteritis, subjaundiced, greyish tint, depression, migraine or hypertony. Examination of the stools throws no light on the absorption of toxins but there may be an acidity and defective pancreas function and motor insufficiency of the stomach.

Berliner klinische Wochenschrift

September 28, LI, No. 39, pp. 1657-1676

- 65 Effect of Manual Artificial Respiration. (Zur Frage nach dem Effekt der manuellen künstlichen Atmung beim Menschen.) A. Loewy.
- 66 Treatment of Colitis by Irrigation through the Appendix. (Behandlung der Colitis gravis mittels Spülungen von der Appendicostomie aus.) E. Fuld.
- 67 Care of the Wounded in the Home Zone. (Der Kriegssanitätsdienst in Berlin.) H. W. Brettner.
- 68 Surgery of Vessels. (Gegenwärtiger Stand der Blutgefäßchirurgie.) E. Jeger. Commenced in No. 38.

Correspondenz-Blatt für Schweizer Aerzte, Basel

September 5, XLIV, No. 36, pp. 1121-1152

- 69 *Skin Reaction in Differentiation of Small-Pox and Chicken-Pox. (Differentialdiagnose von Variola und Varizellen mit Hilfe der kutanen Allergie.) Tièche.
- 70 *Improved Technic for Formaldehyd Sterilization. (Neues apparatloses Formaldehyd-Verdampfungs-Verfahren.) A. Hauswirth.
- 71 *Diagnosis of Gastric and Duodenal Ulcer. F. de Quervain. Commenced in No. 35.

September 9, No. 38, pp. 1185-1216

- 72 Examination in Cases of Paralysis of Ocular Muscles. (Zur Analyse der Doppelbilder.) J. Strebel.

September 26, No. 39, pp. 1217-1248

- 73 Cutaneous Manifestations of Tuberculosis in Children. (Die klein-papulösen Haut-Tuberkulide beim Kinde.) E. Peer.

69. Differential Skin Reaction in Variola and Varicella.—Tièche applies a test technic, similar to that of Pirquet's tuberculin skin reaction, as a means for rapid differentiation of small-pox from varicella and other eruptive diseases. His eighteen months of experience have confirmed, he says, the harmlessness and reliability of the simple measure. Kling's experience with protective vaccination against varicella when an epidemic broke out in an institution with 200 children, also confirmed incidentally the value of the test, as he mentions casually that no local reaction was observed until the eighth day at the point inoculated with the varicella lymph. Vaccine lymph, on the other hand, always induces a prompt local reaction and, generally in four hours at longest. Tièche experimented on himself until he had conclusively demonstrated that no local reaction was evident for several days, if at all, after he had vaccinated himself in the arm with the secretion or rubbed-up contents of a varicella pimple. On the other hand, the secretion or scrap of contents from a small-pox pustule promptly induced a typical early reaction in the skin at the point of inoculation. In his first communication on the subject he reported constantly negative results in 18 varicella cases and constantly positive in 9 variola cases. He here brings his report down to date with 7 new cases suspected to be small-pox. The reaction was positive in 5 and the course of the cases confirmed the assumption of variola, while the negative reaction in the other cases likewise was proved correct by the further course. The test inoculations were made on three healthy adults, himself, his wife and sister-in-law.

To render the secretions harmless, he heated the lymph to 60 or 70 C. for five minutes before applying it to the three minute scratches on the arm, or treated it with carbon dioxide snow or with ether, or all three. If a harmless substance, like a tuberculin, could be prepared to use this would be better, but too much time would be lost. He obtained a positive early reaction with the variola lymph after keeping it for eleven months in one case. A few cases are described in which everything seemed to indicate small-pox but this negative local reaction, and on this he based his diagnosis and allowed the patient to stay at his hotel, thus saving all concerned great annoyance and trouble, and the course of the case confirmed that it was not small-pox, but either varicella or an atypical erythema multiforme. Public health officials might test themselves with varicella secretions to learn whether they are especially sensitive to it. If not, they can feel confident that they will be able to differentiate variola in its earliest stages by the above technic. He gives an illustration of the typical positive and negative findings. (Kling's articles were summarized in THE JOURNAL, Dec. 20 and 27, 1913, pp. 2277 and 2326.)

70. Simplified Technic for Formaldehyd Sterilization.—Hauswirth describes a technic which is proving constantly very effectual. Several chemical reactions are involved, with generation of large amounts of steam, which supplies the needed moisture, and the process starts at once, with extreme violence, so that the effect is realized even if the room is not quite hermetically sealed. There is no danger of fire, he says, while the ingredients are comparatively cheap, and no special skill is required. The ingredients can be put up in two packages for the layman to mix. He reviews the chemical principles involved; the generation of heat is an important factor and the tin tub or wooden tub used must not be too thick-walled or it would absorb too much heat. The substances used are molecular amounts of potassium chlorate and metallic iron in fine powder and calcium carbonate in an amount corresponding to the size of the room. These are all mixed well together. Then formaldehyd is added in the proportion of 20 c.c. to the cubic meter of space. The reac-

tion occurs when to this mixture sulphuric acid is added in an amount to correspond to the molecular relations of the $KClO_3$ and Fe. He mixes the 98 per cent. sulphuric acid with kieselguhr (diatomaceous earth) and dilutes with 20 c.c. water to the cubic meter of space. When these two mixtures are poured together the steam and fumes rise in such clouds that even two liters of fluid soon evaporate and leave the vessel dry.

[The potassium chlorate should be in finely powdered form and be mixed with the iron and chalk without friction, as otherwise there might be danger of an explosion.—Ed.]

71. Gastric and Duodenal Ulcer.—De Quervain's article was prepared for the meeting of the International Surgical Association at New York last April.

Deutsche medizinische Wochenschrift, Berlin

September 24, XL, No. 39, pp. 1777-1800

- 74 *Psychiatry and War. K. Bonhoeffer.
75 *Injuries of the Eyes in the Field. (Kriegsophthalmologische und organisatorische Erfahrungen.) T. Axenfeld.
76 Cremation in Wartime. (Zur Feuerbestattung im Kriege.) J. A. Grober.
77 Vaccine Therapy of Gonorrhea. (Die Vakzinebehandlung der Gonorrhoe und gonorrhöischer Komplikationen.) O. Boeters.
78 Care of the Wounded in the Field. (Organisation des Sanitätsdienstes im Kriege.) Schuster.

74. Nervous and Mental Disease in the Field.—Bonhoeffer reiterates that the protection of the other troops is the first thing to be thought of when mental disease develops in a soldier at the front, and as the tranquil surroundings so necessary in treatment of nervous and mental disease can be obtained only in the home zone, the patient should be hurried thither as fast as possible. To facilitate transportation and the protection of the troops against imitation psychoses, he suggests that nothing seems to act better than 0.0005 to 0.001 gm. scopolamin with 0.01 or 0.02 gm. morphin. Morphin alone is inadequate. He states that during the mobilization in Germany a number of cases of delirium developed, all without physical complications. The emotional stress of starting for the war, the fatigue of long journeys and the deprivation of alcohol were responsible for the delirium in persons in the corresponding stage of chronic intoxication.

75. Injuries of the Eyes in the Field.—Axenfeld has already had extensive experience in this line as his town, Freiburg, has received large numbers of wounded direct from the battle-fields in Lothringen. He emphasizes the necessity for caring for the injured eye from the first instead of deferring this until later as too often happens when the wounds are extensive elsewhere, and the eye is left in such a condition as to invite sympathetic ophthalmia. He asserts that insidious inflammatory changes developing in the wounded eye are the most liable to entail sympathetic mischief; when the inflammation develops with a stormy onset the other eye is far more liable to escape. If the eye has been perforated by a projectile cautious exenteration should be done, scraping out with the curet every scrap of tissue, particularly of the uvea, after removing the cornea. When the exenteration is complete the conjunctiva should be drawn together with a few loose stitches if possible. Circumscribed wounds and ruptures affecting only the front part of the eye may heal with retention of some vision, even if the interior of the eye has been flooded with blood; it may be absorbed in time if the wound heals over without inflammation. The best method to obtain this is to draw down the mobilized conjunctiva according to Kuhnt's technic. In one of his cases this was done at once and the ruptured margin of the cornea healed under this plastic shield without a trace of infection and vision is improving every day. The main point is to have such wounds of the eyes fall early into the hands of one skilled in operative ophthalmology. The humors of the eye afford unusually good culture media for germs; pneumococcus sepsis developed in some cases incredibly fast after a shrapnel injury of the eyeball. Roentgenoscopy may fail to reveal metal scraps which yet can be drawn out with the magnet. Axenfeld has impressed on the army surgeons at the front the extreme importance of sending men whose eyes have been

injured to the nearest ophthalmologist, and has insisted on such being available near the front.

Jahrbuch für Kinderheilkunde, Berlin

August, XXX, No. 2, pp. 133-262

- 79 *Curability of Tuberculous Meningitis. (Heilungsmöglichkeit der Meningitis tuberculosa.) J. v. Bokay.
80 Composition of Body in Malnutrition. (Zur Kenntnis der Körperzusammensetzung bei Ernährungsstörungen.) E. Klose.
81 Pneumococcus Meningitis. (Ueber Pneumokokkenmeningitis und ihre Behandlung mit Optochin.) S. Wolff and W. Lehmann.
82 *More Individualization in Infant Feeding in Hospitals. (Eine weniger schematische Behandlung von Säuglingen im Krankenhaus.) K. Stolte.
September, No. 3, pp. 263-372
83 The Problem of Contagiousness. F. v. Szontagh.
84 Supernumerary Bone in Infants' Skull. (Grosser Fontanellknochen der vorderen Fontanelle bei einem Säugling.) M. Soldin.
85 Leukemia in Infants. (Die Leukämie der Säuglinge.) E. Adler.
86 *Intravenous Antitoxin in Diphtheria. K. Alber.
87 Persisting Aortic Stem and Ductus Arteriosus in Infant Living for Six Months. (Fall von persistierendem Truncus arteriosus communis.) Z. von Bokay.

79. Curability of Tuberculous Meningitis.—A diagnosis of tuberculous meningitis has commonly been regarded as equivalent to a death sentence. Bokay gives tables of 34 cases of recovery in this disease, reported in the literature, and details of three cases of his own. There were no recoveries in children under 2 years of age; the proportion of recoveries increased in children from 5 years up, though only 10 per cent. of the cases occur in children over 7. The recoveries generally occurred in cases in which the tuberculosis was limited to the meninges and did not involve other organs, and in which there is no marked tubercle formation. Aside from hyperemia, the only method of treatment that contributes to recovery is the surgical, consisting in trephining and drainage. In the cases in which recovery has followed Quincke's lumbar puncture, he thinks that the recovery is due as much to the natural resistance of the body as to the treatment.

82. More Individualization in Care of Infants in Hospitals.—The results in hospitals for infants and children have been better of recent years with the development of greater knowledge of the principles of nutrition. The fact remains, however, that the majority of children do not thrive as well in a hospital as in the home. This question of "hospitalism" has been much discussed. Stolte holds that with proper management children may be made to thrive as well in hospitals as in the home. To accomplish this result it is necessary to individualize more in the child's treatment. There are many factors that enter into his well-being besides those of just the right kind and amount of nourishment. Rules should not be followed blindly. The nurses should be given considerable latitude in their treatment of the child, and nurses of sufficient intelligence and interest selected so that they will, to a certain extent, supply the place of a mother's care. The child has psychologic, as well as physical needs, and personal attention and tenderness are important factors. In his service, the mothers themselves are allowed to be with the children as much as possible. Adults require different amounts of food at different times and under different bodily conditions. Why not infants? So the amount of food is adjusted, within certain limits, to the child's desires. If he is manifestly hungry a quarter or a half hour before feeding time he is fed. Nurses are taught to watch each individual child and treat it as a human being with emotions and desires, not merely as a "case" in which certain rules are to be followed in a routine fashion. Often a child can be made to assimilate its nourishment satisfactorily only after the nurse has carried it about, played with it or sung to it. Naturally this does not mean that there is any relaxation of care in regard to scientific feeding, avoidance of infection, etc., but rather the contrary. Medicinal treatment is avoided in alimentary disturbances as far as possible. Five case histories are given illustrating the method and its success.

86. Intravenous Injection of Antitoxin in Diphtheria.—There was an extraordinarily severe epidemic of diphtheria in Bremen in the winter in 1913. Because of the unusual severity of the disease, Alber adopted the intravenous method

before removing it, in case of impossibility of delivery by the natural route, is just as much an intentional killing of the child as if craniotomy had been done at once. In cases of contracted pelvis with infection already installed and living child, he has often done extraperitoneal cesarean section, but the final outcome was frequently disastrous for mother or child or both. His disappointing results in this class of cases led him to treat later cases by abdominal hysterectomy. This spared the pelvis all danger of contamination from infected fluids, and the operation can be done so quickly that the child is promptly delivered alive. In one case the woman was seven months pregnant and had a very large cancer of the cervix. As soon as the uterus was taken out it was carried into another room by the assistant and a living child extracted from it. In a recent case a woman with contracted pelvis had been in labor for two days; the temperature was 39 and 39.5 C.; pulse 120, and the secretions smelt bad. One of her two previous pregnancies had required craniotomy; the other had terminated in a miscarriage at seven months. Recasens decided at once to remove the unopened uterus. The vagina was painted with strong tincture of iodine. As soon as the abdomen was opened the ligaments and arteries of the uterus were clamped before the vagina was entered. A normal male child weighing 3,100 gm. was taken from the uterus, which had been hurried into the next room. He insists that this method should be adopted as the routine procedure when the temperature is high. In cases merely suspected of infection, extra-peritoneal cesarean section may render service.

Gazzetta degli Ospedali e delle Cliniche, Milan

September 27, XXXIV, No. 112, pp. 1217-1232

119 *Rapid Post-Typhoid Cholelithiasis. P. Ballarin.

119. Rapid Development of Gall-Stones after Typhoid.—Ballarin's patient was a girl of 16 who had typhoid with the six other previously healthy members of the family. The temperature did not return quite to normal for a month after the main typhoid symptoms had subsided. During this convalescent period she had several attacks of gall-stone colic and passed two concretions. Typhoid bacilli were cultivated from the center of each, but none was found in the stools during or after convalescence. The gall-stones were of pure cholesterol, pigmented in the center.

Pediatria, Naples

September, XXII, No. 9, pp. 641-720

- 120 *Stimulation of Gaseous Metabolism during Treatment with Direct Sunlight. (Modificazioni del ricambio respiratorio sotto l'influenza dell'elioterapia.) G. di Cristina.
- 121 *Purulent Disease of the Urinary Passages in Young Children. (Sulle affezioni purulente delle vie urinarie nell'infanzia.) S. Cannata and G. Caronia. Concluded.
- 122 Blood-Findings in Kala Azar in Children. (Contributo alla ricerca del parassita di Leishman nel sangue periferico di bambini affetti da Leishmaniosi.) R. Vaglio.

120. Stimulation of Gaseous Interchanges during Heliotherapy.—Di Cristina tabulates the findings in regard to the gaseous interchanges in three children during periods of three weeks or more before and during systematic exposures to the direct sunlight in treatment of tuberculous lymph-glands or hypothyroidism. The findings testify to marked stimulation of the oxidative processes and the metabolism in general. The vital processes proceed more vigorously, especially assimilation of the food. The respiratory quotient had averaged 0.927 and 0.792 in the two tuberculous cases but after two weeks of heliotherapy it averaged 1.143 and 1.0632.

121. Purulent Infections of the Urinary Tract in Infants.—Cannata and Caronia conclude their long study of this subject by emphasizing the necessity for warding off infection of the urinary tract as it is liable to prove a very serious matter, especially in young infants and all children with an inherited taint. Phimosis and foreign bodies in the bladder should receive special attention in prophylaxis, and every effort should be made to avoid trauma of the bladder, chilling, habitual constipation (in which there is usually elimination of germs by way of the urinary apparatus), and inade-

quate intake of fluids. Care should be taken to prevent soiling the parts with feces, and during the course of an casual infection the urine should be frequently examined and the child compelled to drink often and freely to prevent clogging of germs in the kidneys and bladder. In diseases known to affect the kidneys, it might be advisable to give small preventive doses of hexamethylenamin in addition large amounts of fluid. When a cystitis or pyelocystitis diagnosed, strict bed rest should be enforced and the fluid be entirely fluid. Even nursing infants should be made drink copiously. If an infant refuses to drink freely, water should be poured into the stomach through a tube injected into the rectum. The diet should be as nourishing as possible; nothing is worse than to let the child's strength run down from lack of adequate nourishment.

They have found hexamethylenamin very useful. Hematuria followed its use in one of the cases; the child was subject to epistaxis and the hematuria promptly subsided suspension of the drug. In the few cases on record in which hematuria was noticed under this drug, there was evident a tendency to hemophilia. Salol or salicylic acid may alternated with it. The doses recommended are from 0.8 to 1.5 gm. hexamethylenamin and 0.5 to 1.5 gm. salol in twenty-four hours for an infant; older children can take to 2.5 gm. of each. To favor the disinfectant action of the former, large amounts of an acid drink (hydrochloric or phosphoric acid), extremely diluted, are given with the hexamethylenamin. Local treatment of the cystitis is seldom required. In rebellious cases, serotherapy or vaccine therapy may prove useful. Great improvement was realized with the latter in a case of pyelocystitis from colon bacilli and Fränkel's diplococcus. Anorexia may be combated with five or ten drops of fluid extract of condurango twice a day before meals; or the child may have to be fed through stomach tube or given nutrient enemas. Scraps of ice in the mouth may arrest vomiting; if not, a teaspoonful of a 2 per cent. solution of sodium citrate as needed.

Policlinico, Rome

August, XXI, Medical Section, No. 8, pp. 341-388

- 123 *Cholesterin in the Blood and Resisting Power of the Red Corpuscles in Anemic Conditions. G. Antonelli.
- 124 Lipemia, Especially in Diabetes Mellitus. P. Bosco. Commenced in No. 7.
- September, No. 9, pp. 389-436
- 125 *Epinephrin in the Blood and Its Influence on the Cholesterin Urea Content of the Blood and Cerebrospinal Fluid in Sick Healthy Children. L. M. Spolverini.
- 126 Influence of Splenectomy on Experimental Pneumococcus Infection. U. Comelli.
- 127 *The Hygienic and Epidemiologic Importance of the Gases of Putrefaction. V. Puntoni. Commenced in No. 8.

123. Cholesterinemia.—Antonelli tabulates the blood findings in ten cases of anemia from various causes. The cholesterin content of the blood serum ranged from 0.21 per cent. to 1.56, the hemoglobin from 18 to 80 per cent. There does not seem to be any connection between the cholesterol content and the degree of the anemia nor with the greater or less resisting power of the red corpuscles.

125. Epinephrin in the Blood of Children.—Spolverini has been investigating the epinephrin content of the blood in various acute infectious diseases in thirty children, with constantly and totally negative findings. Epinephrin was administered to a number of healthy children by the mouth or subcutaneously, and in consequence the proportion of cholesterol in the blood materially increased while that of urea in cerebrospinal fluid became much reduced. The influence of the epinephrin on the children was manifested in a slowing of the pulse and higher blood-pressure.

127. Pathogenic Influence of Gases of Putrefaction.—Laboratory animals forced to inhale gases from putrid matters died in time and severe changes were found in the internal organs, and the virulence of the bacteria in the intestines seemed to be immeasurably enhanced. Puntoni concludes that the gases of putrefaction evidently predispose to intestinal infection, both by rendering the germs more virulent by injuring the howel walls.

